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TRANSCRIPT OF RECORD.

SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, 1889.

No. 97.

WILHELM PICKHARDT AND ADOLF KUTTROFF, PLAINTIFFS IN ERROR,

vs.

EDWIN A. MERRITT, LATE COLLECTOR OF THE PORT OF NEW YORK.

IN ERROR TO THE CIRCUIT COURT OF THE UNITED STATES FOR THE SOUTHERN DISTRICT OF NEW YORK.

FILED SEPTEMBER 29, 1886.

accession 23900

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1 UNITED STATES OF AMERICA, *ss:*

The President of the United States to the judges of the circuit court of the United States for the southern district of New York, Greeting:

Because in the record and proceedings, as also in the rendition of the judgment of a plea which is in said circuit court, before you or some of you, between Wilhelm Pickhardt and Adolf Kuttroff, plaintiffs, and Edwin A. Merritt, defendant, a manifest error hath happened, to the great damage of the said Wilhelm Pickardt and Adolf Kuttroff, as is said and as appears by their complaint, we, being willing that such error, if any hath been, should be duly corrected and full and speedy justice done to the parties aforesaid in this behalf, do command you, if judgment be therein given, that then, under your seal, distinctly and openly, you send the record and proceedings aforesaid, with all things concerning the same, to the justices of the Supreme Court of the United States, at the Capitol, in the city of Washington, together with this writ, so that you have the same at the said place, before the justices aforesaid, on the second Monday of October next, that, the record and proceedings aforesaid being inspected, the said justices of the Supreme Court may cause further to be done therein to correct that error what of right and according to the law and custom of the United States ought to be done.

Witness the Honorable Morrison R. Waite, Chief Justice of the Supreme Court of the United States, this 9th day of July, in the year of our Lord one thousand eight hundred and eighty-six, and of the Independence of the United States the one hundred and tenth.

[Seal of U. S. Circuit Court, South. Dist. New York.]

TIMOTHY GRIFFITH,
Clerk of the Circuit Court of the United States of America for the Southern District of New York, in the Second Circuit.

The foregoing writ is hereby allowed.

WM. J. WALLACE,
Circuit Judge.

July 8th, 1886.

2 [Endorsed:] Supreme Court of the United States. 5798. Wilhelm Pickhardt & ano. ag'st Edwin A. Merritt. Writ of error. C. Bainbridge Smith, att'y for pl'ffs, 94 Liberty street, New York city. A copy of the within paper has this day been received at this office, Aug. —, 1886. Stephen A. Walker, U. S. attorney. Due service of within is hereby admitted. N. Y., Aug. 3, 1886.

[Stamped:] U. S. circuit court. Filed Aug. 6, 1886. Timothy Griffith, clerk.

UNITED STATES OF AMERICA, *Southern District of New York,* } ss:

I, Timothy Griffith, clerk of the circuit court of the United States of America for the southern district of New York, in the second circuit, by virtue of the foregoing writ of error and in obedience thereto, do hereby certify that the following pages, numbered from one to two hundred and eighty-five, inclusive, contain a true and complete transcript of the records and proceedings had in said court in the case of Wilhelm Pickhardt and Adolf Kuttroff, plaintiffs in error, against Edwin A. Merritt, defendant in error, as the same remain of record and on file in said office.

In testimony whereof I have caused the seal of the said court to be affixed, at the city of New York, in the southern district of New York, in the second circuit, this thirteenth day of September, in the year of our Lord one thousand eight hundred and eighty-six, and of the Independence of the United States the one hundred and eleventh.

[Seal of U. S. Circuit Court, South. Dist. New York.]

TIMOTHY GRIFFITH, *Clerk.*

3 Circuit Court of the United States for the Southern District of New York, in the Second Circuit.

WILLIAM PICKHARDT and ADOLPH KUTTROFF, Plaintiffs. *against* EDWIN A. MERRITT, Defendant. } Summons.

To the above-named defendant:

You are hereby summoned to answer the complaint in this action, and to serve a copy of your answer on the plaintiffs' attorney within twenty days after the service of this summons, exclusive of the day of service; and in case of your failure to appear or answer judgment will be taken against you by default for the relief demanded in the complaint.

Dated New York, April 2, 1879.

C. BAINBRIDGE SMITH,
Plaintiffs' Attorney; Office and Post-Office Address,
No. 145 *Broadway, New York City.*

4 Circuit Court of the United States for the Southern District of New York, in the Second Circuit.

WILLIAM PICKHARDT and ADOLF KUTTROFF
ag'st
EDWIN A. MERRITT.

CITY AND COUNTY OF NEW YORK:

The complaint of Wilhelm Pickhardt and Adolf Kuttroff, plaintiffs, against the defendant, Edwin A. Merritt.

First. At the times hereinafter mentioned the plaintiffs did business in the city of New York, under the firm name of Wm. Pickhardt & Kuttroff, and the defendant is and was collector of customs at the port of New York.

That the plaintiffs, on or about the 1st of February, 1879, imported from Hamburg, Europe, five cases of naphthylamine red, which are certain dye-stuffs made from naphthylamine, and not aniline dyes, and on which the said defendant illegally and without any authority therefor, and upon the pretended claim that
5 said dye-stuffs were aniline dyes, exacted from the plaintiffs in excess of the lawful duties imposed thereon the sum of three hundred and ninety-four dollars, which sum the said plaintiffs, in order to obtain possession of said dye-stuffs, were compelled to pay, and did, on the 20th and 21st days of February, 1879, pay the defendant the said sum of three hundred and ninety-four dollars under protest, which last-mentioned sum is now due and owing from the defendant to the plaintiffs therefor with interest thereon from the 21st day of February, 1879.

Second. That the plaintiffs, on or about the 1st of February, 1879, imported from Hamburg, Europe, two cases of orange II, which are certain dye-stuffs made from naphthylamine, and not aniline dyes, and on which the said defendant illegally and without any authority therefor, and upon the pretended claim that said dye-stuffs were aniline dyes, exacted from the plaintiffs in excess of the lawful duties imposed thereon the sum of one hundred and
6 forty-one dollars and ten cents, which sum the said plaintiffs, in order to obtain possession of said dye-stuffs, were compelled to pay, and did on the 21st day of February, 1879, pay the defendant the said sum of one hundred and forty-one dollars and ten cents under protest, which last-mentioned sum is now due and owing from the defendant to the plaintiffs therefor, with interest thereon from the 21st day of February, 1879.

Third. And for a further cause of action against the said defendant the plaintiffs also allege that on or about the 1st of February, 1879, they imported from said Hamburg, Europe, one case of orange IV, which is a certain dye-stuff made from naphthylamine, and not an aniline dye, and on which the said defendant illegally and without any authority therefor, and upon the pretended claim that the said orange IV was an aniline dye, exacted from these plaintiffs in

excess of the lawful duties imposed thereon the sum of eighty-four dollars and twenty-five cents, which sum the said plaintiffs, in order to obtain possession of said dye-stuff, were compelled to pay,
7 and did on the 21st day of February, 1879, pay to the defendant the said sum of eighty-four dollars and twenty-five cents under protest, which last-mentioned sum is now also due and owing from the said defendant to the plaintiffs therefor, with interest thereon from the 21st day of February, 1879.

Fourth. And for a further cause of action against the said defendant the plaintiffs also allege that on or about the 13th day of January, 1879, they imported from said Hamburg, Europe, two other cases of orange II, which are certain dye-stuffs made from naphthylamine and are not aniline dyes, and on which the said defendant, illegally and without any authority therefor and upon the pretended claim that said orange II were aniline dyes, exacted from these plaintiffs, in excess of the lawful duties imposed thereon, the sum of one hundred and forty-one dollars and seventy cents, which sum the said plaintiffs, in order to obtain possession of said dye-stuffs, were compelled to pay, and did, on the 1st day of April, 1879, pay to the defendant the said sum of one hundred
8 and forty-one dollars and seventy cents under protest, which last-mentioned sum is now also due and owing from the said defendant to the plaintiffs therefor, with interest from the 1st day of April, 1879.

Fifth. And for a further cause of action against the said defendant the plaintiffs also allege that on or about the 27th day of January, 1879, they imported from said Hamburg, Europe, one case of resorcin-red J, which is a certain dye-stuff and a resorcin-dye, and not an aniline dye, and upon which the said defendant, illegally and without any authority therefor and upon the pretended claim that said resorcin- J was an aniline dye, exacted from these plaintiffs, in excess of the lawful duties imposed thereon, the sum of one hundred and thirty-five dollars and fifty cents, which said sum the said plaintiff-, in order to obtain possession of said dye-stuff, were compelled to pay, and did, on the 20th day of February, 1879, pay to the defendant the said sum of one hundred and thirty-five dollars and fifty cents under protest, which last-mentioned sum is also now due from the said defendant to the plaintiffs therefor, with interest from the 20th day of February, 1879.

Sixth. The plaintiffs also allege that the several protests above
9 mentioned were in writing, duly signed by the plaintiffs, who are the claimants of said dye-stuffs, and were made and delivered to the said defendant at and before the payment of the sums above mentioned, and which protests did set forth distinctly and specifically the ground of objection to the amounts above claimed, and that appeals from the several amounts so executed [exacted] by and paid to the said defendant were duly taken by said plaintiff- to the Secretary of the Treasury, who afterwards approved the assessment of duty so exacted and imposed by the defendant.

Wherefore the plaintiffs demand judgment against the defendant for the sum of eight hundred and ninety-six dollars and fifty-five

cents, with interest on the sum of seven hundred and fifty-four dollars and eighty-five cents from the 21st day of February, 1879, and interest on the sum of one hundred and forty-one dollars and seventy cents from the 1st day of April, 1879, besides the costs of this action.

C. BAINBRIDGE SMITH,
Attorney for the Plaintiffs.

CITY AND COUNTY OF NEW YORK, *ss:*

10 Wilhelm Pickhardt, being duly sworn, says that he is one of the plaintiffs in the above-entitled action; that the foregoing complaint is true of his own knowledge, except as to the matters therein stated to be alleged on information and belief, and that as to those matters he believes it to be true.

WM. PICKHARDT.

Sworn to before me this 3rd day of April, 1879.
[SEAL.] BENJAMIN YATES,
Notary Public (8), *New York County.*

(Endorsed:) U. S. circuit court. Wilhelm Pickhardt & ano. ag'st Edwin A. Merritt. (Copy.) Summons & complaint. C. Bainbridge Smith, att'y for pl'ffs.

11 Circuit Court of the United States for the Southern District of New York, in the Second Circuit.

WILLIAM PICKHARDT and ADOLF KUTTROFF *ag'st* EDWIN A. MERRITT.

Please take notice that the following is a bill of particulars of the plaintiffs' demand alleged in the first cause of action set forth in the complaint in this action:

1. The name- of the importers are Wilhelm Pickhardt and Adolf Kuttroff, doing business under the firm name of Wm. Pickhardt & Kuttroff.
2. The description of the merchandise is naphthylamine red.
3. The place from which said merchandize was imported is the city of Hamburg, Europe.
4. The name of the vessel is the st'r Cambria.
5. The date of the invoice is Stuttgart, Jan'y 9th, 1879.
6. The date of entry at the custom-house is the 1st day of February, 1879.

12 7. The precise amount of duty claimed to have been exacted in excess is the sum of three hundred and ninety-four dollars.

8. The date of the payment of said duties is February 20th, 1879, $157.60, and February 21st, 1879, $236.40.

9. The day and year on which protest was filed against the exaction thereof were the 20th day of February, 1879.

10. The date of appeal to the Secretary of the Treasury is the 20th day of February, 1879.

11. The date of the decision of the Secretary of the Treasury is March 15, 1879.

Second. The following is a bill of particulars of the plaintiffs' demand alleged in the second cause of action set forth in the complaint in this action:

1. The name- of the importers are Wilhelm Pickhardt and Adolf Kuttroff, doing business under the firm name of Wm. Pickhardt & Kuttroff.

2. The description of the merchandise is orange II.

3. The place from which said merchandise was imported
13 is the city of Hamburg, Europe.

4. The name of the vessel is the st'r Cambria.

5. The date of the invoice is Stuttgart, Jan'y 9th, 1879.

6. The date of entry at the custom-house is the 1st day of February, 1879.

7. The precise amount of duty claimed to have been exacted in excess is the sum of one hundred and forty-one dollars and ten cents.

8. The date of payment of said duty is February 21st, 1879.

9. The day and year on which protest was filed against the exaction thereof were the 20th day of February, 1879.

10. The date of appeal to the Secretary of the Treasury is the 20th day of February, 1879.

11. The date of the decision of the Secretary of the Treasury is March 15, 1879.

Third. The following is the bill of particulars of the plaintiffs' demand alleged in the third cause of action set forth in the complaint in this action:

1. The name- of the importers are Wilhelm Pickhardt and Adolph Kuttroff, doing business under the firm name of Wm.
14 Pickhardt & Kuttroff.

2. The description of the merchandise is orange IV.

3. The place from which said merchandise was imported is the city of Hamburg, Europe.

4. The name of the vessel is the st'r Cambria.

5. The date of the invoice is Stuttgart, Jan'y 9th, 1879.

6. The date of entry at the custom-house is the 1st day of February, 1879.

7. The precise amount of duty claimed to have been exacted in excess is the sum of eighty-four dollars and twenty-five cents.

8. The date of payment of said duties is February 21st, 1879.

9. The day and year on which protest was filed against the exaction thereof were the 21st day of February, 1879.

10. The date of appeal to the Secretary of the Treasury is the 21st day of February, 1879.

11. The date of the decision of the Secretary of the Treasury is March 15, 1879.

Fourth. The following is the bill of particulars of the plaintiff's demand alleged in the fourth cause of action set forth in the complaint in this action.

1. The names of the importers are Wilhelm Pickhardt and
15 Adolph Kuttroff, doing business under the firm name of Wm. Pickhardt & Kuttroff.

2. The description of the merchandize is Orange II.

3. The place from which said merchandize was imported is the city of Hamburg, Europe.

4. The name of the vessel is the st'r Frisia.

5. The date of the invoice is Stuttgart, Dec. 18, 1878.

6. The date of entry at the custom-house is the 13th day of January, 1879.

7. The precise amount of duty claimed to have been exacted in excess is the sum of one hundred and forty-one dollars and seventy cents.

8. The date of payment of said duty is April 1st, 1879.

9. The day and year on which protest was filed against the exaction thereof were the 21st day of February, 1879.

10. The date of appeal to the Secretary of the Treasury is the 21st day of February, 1879.

11. The date of the decision of the Secretary of the Treasury is March 15, 1879.

Fifth. The following is the bill of particulars of the plain-
16 tiffs' claim in the fifth cause of action set forth in the complaint in this action:

1. The name- of the importers are Wilhelm Pickhardt and Adolf Kuttroff, doing business under the firm name of Wm. Pickhardt & Kuttroff.

2. The description of the merchandise is resorcin- red J.

3. The place from which said merchandise was imported is the city of Hamburg, Europe.

4. The name of the vessel is the st'r Gellert.

5. The date of the invoice is Stuttgart, Dec. 31, 1878.

6. The date of entry at the custom-house is the 27th day of January, 1879.

7. The precise amount of duty claimed to have been exacted in excess is the sum of one hundred and thirty-five dollars and fifty cents.

8. The date of payment of said duty is February 20th, 1879.

9. The day and year on which protest was filed against the exaction thereof were the 20th day of February, 1879.

10. The date of appeal to the Secretary of the Treasury is
17 the 20th day of February, 1879.

11. The date of the decision of the Secretary of the Treasury is March 15, 1879.

New York, April 22, 1879.

C. BAINBRIDGE SMITH,
Attorney for Plaintiffs.

(Endorsed:) U. S. circuit court. Wilhelm Pickhardt & ano. ag'st Edwin A. Merritt. Plaintiffs' bill of particulars. C. Bainbridge Smith, att'y for pl'ffs, 145 B'way.

18 United States Circuit Court, Southern District of New York.

WILLIAM PICKHARDT and ADOLPH KUTTROFF
versus
EDWIN A. MERRITT, Collector, etc.

The answer of defendant herein, by Stewart L. Woodford, his attorney, to the complaint of the plaintiffs in the above-entitled action.

I. He admits he was at the times in said complaint mentioned collector of the port of New York, and in such official capacity received payment from the plaintiffs for and on account of duties due to the United States, under the laws thereof, upon certain importations of merchandise imported by said plaintiffs into the port of New York from foreign countries.

II. He alleges that any and all moneys received by him from plaintiffs at the times in said complaint mentioned were paid by said plaintiffs as a debt due by them to the United States, and not otherwise, and were received by defendant by virtue of his
19 office as said collector and under the direction of the Secretary of the Treasury and for and on account of the United States, and were forthwith thereafter and before the commencement of this action or the service of any protest paid into the Treasury of the United States, and that the amount- of said moneys so received from plaintiffs were the amounts due from them to the United States, according to the rate of duty imposed by law, upon the several articles of merchandise by them imported and assessed with duty, and no other sums than duties regularly assessed and ascertained and liquidated, according to law, upon the plaintiffs' import entry thereof were collected or received by defendant from the plaintiffs.

III. And defendant, further answering, denies that he has at this time sufficient information to form a belief as to the precise description of the merchandise contained in the several packages referred to in the said complaint by the marks and numbers and de-
20 scription there given, except in so far as to state, and defendant, herein answering, doth aver and state, that said merchandise were dutiable, according to the laws of the United States, at the rates at which the same were assessed.

IV. And defendant, further answering, admits that plaintiffs filed with defendant certain protests, but he denies that he has sufficient information to form a belief as to whether upon the importations in question protests and appeals were made by the plaintiffs conformable to the laws of the United States, and defendant leaves plaintiffs to make such proof thereof as they may be advised.

V. And as to any other allegations in said complaint contained not hereinbefore fully answered or admitted, defendant denies the

same and each thereof, and leaves the plaintiffs to make such proof thereof as they may be advised.

Wherefore defendant demands judgment that the complaint be dismissed with costs.

STEWART L. WOODFORD,
United States Attorney, for Defendant.

21 SOUTHERN DISTRICT OF NEW YORK, } ss:
City and County of New York, }

Edwin A. Merritt, being duly sworn, says that he is the defendant above named; that the foregoing answer is true to his own knowledge, except as to the matters stated on information and belief, and as to those matters he believes it to be true.

E. A. MERRITT.

Sworn to before me this 25th day of April, 1879.

GEO. HILLIAR,
Notary Public, New York City.

(Endorsed:) U. S. circuit court, southern district of New York. Wm. Pickhardt & ano. *vs.* Edwin A. Merritt, collector, etc. Answer. Stewart L. Woodford, United States attorney, for defendant. U. S. circuit court. Filed Apr. 28, 1879. Timothy Griffith, clerk.

22 At a stated term of the circuit court of the United States of America for the southern district of New York, in the second circuit, held at the United States court-rooms, in the city of New York, on Tuesday, the 29th day of January, in the year of our Lord one thousand eight hundred and eighty-four.

Present: The Honorable Hoyt H. Wheeler, judge.

WILHELM RICKHARDT *et al.*
vs.
EDWIN A. MERRITT. } 5798.

Now come the plaintiffs, by Stanley, Clark & Smith, their attorneys, and move the trial of this cause; likewise comes the defendant, by Elihu Root, U. S. attorney, his attorney; thereupon a jury is empanelled and the cause proceeds to trial.

After hearing the evidence of the parties, the argument of counsel, and the instructions of the court, on Wednesday, Feb'y 6th, 1884, the jury retire, and on their return rendered a verdict whereby they found for the defendant. On motion of counsel for plaintiffs, it is ordered that plaintiffs have a stay of proceedings for thirty days from Feb'y 6th, 1884.

A copy.

[Seal U. S. Circuit Court S. D. of N. Y.]

TIMOTHY GRIFFITH, *Clerk.*

Will you give a little history of yur importation of those various dyes?

28 A. In the year 1861 these aniline dyes or some aniline dyes, I should say, came into general use, more or less, here in this country. A little of them had been imported the year before, and I even believe some importations happened in the year 1859, but they were of small account. In the year 1861, however, the importations increased, and I imported with my then partner, Perkins, purple, fuchsine, which we called rosine. We imported fuchsine in the liquid, and we imported it in a dry state, what we called fuchsine cake. The fuchsine cake was a very impure thing. We boiled it with alcohol and extracted a dye from it, put the dye in cans and sold it under the name of rosine, similar to what we imported in a liquid state from London. Some other importers imported at that time fuchsine in a very dirty state. It was a brownish paste that was made in France by Rene Le Franc. I did not import any from those people. In the year 1862 the consumption of these dyes increased, especially of the red, which is called fuchsine, and has, probably, a dozen names. One name is magenta. The name magenta was given to it because it was introduced in 1859, when the war was going on between France and Austria, and the first battle which was fought was at Magenta, and the French were successful in that battle, and the French manufacturers called their red magenta. The second battle was Solferino; and the violet came in meanwhile, and they called that solferino. But these two names have been confounded. Some call red solferino and the purple the magenta, and *vice versa*. In 1862 crystals of this red were imported. These crystals were sold for $110 a pound. A little later on it was reduced to $75—those very French crystals. Then a German importer imported some from Germany. He put the price down to

29 $62.50, and the French agents followed him. We at that time had no crystals; we had only the liquid; but in the latter part of 1862—in the summer of 1862, in August, 1862—we got crystals. We sold them the best we could, of course—for $60. We sold some for $55, but we couldn't get many of them; no one could. The demand was, so to speak, considerable and the supply was limited. There was no such demand and supply as there is now; the consumption was small. Of the Perkins purple we used to import it some; we continued to use it and to import it. We sold it here under the name of purple paste; it was sold in England under the name of Perkins' purple, and that which was made by Roberts, Dale & Co. they sold as mauve paste; what was made in France—in Paris—was sold as rosaline, and another man called it still another name, which I have forgotten. We sold it as purple paste and competitors of ours sold it as violet paste. In 1862 we got the violets in powder. They were not crystals; they were powders—violets and blues. They were violets and blues that were soluble in alcohol, and they were to be dissolved in alcohol. They were made, as far as I recollect, by the process of Girard & De Ler. We called them Parme B. B., meaning a bluish shade; Parme B., a lighter shade; Parme R., a red shade; and Parme R. R., still more

red. The men put the label on blues. Then we imported afterwards a blue which we called a night blue. But these were in 1862, the main dyes, and in 1863 about the same. We imported at that time from London, from Ford & Co., from whom we got blood albumen, a thing which is used for fuchsine, a dye on cotton cloth. He sent us a yellow—a peculiarly crystallized yellow. It was pretty high in price, and, if I recollect correctly, he sold it to us under the name of an aniline yellow. We sold
30 it to the soap-makers here in the city and in Philadelphia. They used it for coloring their soap, which was called honey soap. After a while we couldn't get it; the importations were small; didn't amount to many pounds; I don't believe they amounted to—certainly not over two hundred (200) pounds in the whole year; probably under a hundred or less. For some reason or other they stopped making this yellow. We had been trying very hard to get it again, but couldn't get it under any circumstances. Some people said the man poisoned it; it was poisoned by the manufacturer; at all events, it was poisoned. We couldn't get it again. Our London agent sent us something else. He said, "I will send you something that will do just as well—another aniline yellow." We gave it again to our customers—the soap people. They said. "It will do, but it won't answer as well as the other yellow." But this new yellow was considerably less in price, it happened, than the other one was. Of course, as the men said it was the same thing, we sold it for the same price as the high-priced article; but we very soon found that it was not the same from the soap people for that reason; it was a different thing; in 1863 the same dyes were sold; of course the prices dropped down from these aniline dye prices; the consumption increased, and the supply grew larger as the demand increased; so prices naturally dropped, so that the same thing that was first sold at $110 a pound, and we sold afterwards at $60, $62, and $65 a pound, we sell now for $2 a pound and for even less—for $1.80. In the latter part of—I believe it was 1866, or it may have been 1867—there came a new violet in, called Hofman's violet, and also iodine violets;
31 they were sent to us on consignment by the firm Farbwerke, vormals Meister Lucius & Bruening, of Hoechst, in Germany, and they called them premola; these violets were quite different from the violets which we had been selling up to that time; these violets were soluble in water and dyed without any mordant or any acid or anything, in a hot bath, the same as fuchsine; the old violets had to be dissolved in alcohol and introduced into a sour bath—hot—else they precipitated; and the wool had to be soured in order to take up the dye, else it would vile the men—smut as the dyers call it. I will mention that fuchsine, the first aniline red which came into use, is a dye which dyes in what we call a neutral bath—that is to say, plain water heated up to nearly the boiling point, but a little below the boiling point; the dye is introduced and then the water is kept at that heat and the wool is worked in until the dye is got; it won't stand acid and it won't stand alkali; and this dye was first introduced.

Q. Do you now mean the fuchsine or Hofman's violet?

was made or it was invented by Professor Baeyer and made from phtalic acid and pyrogallic acid, and this green is really the only green which is a green by itself without mixing; and Professor Baeyer called it a sea green because of its peculiarly green hue, like the ocean, where the water is not very deep, as it is on the coast of Germany and Holland, and around there where the water is only about 70 or 75 fathoms deep. Where we get into deep water of 1,500 or 2,000 fathoms it is a deep blue. Again, on the banks of Newfoundland it is green.

Up to 1871 these dyes which I have mentioned to you, except this coeruline green, were the only dyes which were imported. There may have been a great many various names under which these dyes were imported. A great many names were given to these dyes, but they dropped very soon out of the market. These which I have mentioned to you were the main aniline colors—that is, the Perkins purple, fuchsine red, the aniline violets, called parham or ponceau, the aniline blues, then the Nicholson blues, then the Hofman's violets or premolas, and the methyl violets; and then we continued, of course, to import some of that yellow. We commenced, also,
36 within that time to import the brown; yes, it must have been at that time, because they very soon gave it the name of Bismarck brown, in the war with the Austrians. I think, also aurine was imported up to that time—aurine or rosolic acid or coraline. I am pretty sure it was imported up to that time; then came, in 1871, the dye called methyl aniline green; that was a great improvement; this methyl aniline green was a great improvement over the aldehyde green; it was introduced into the trade in 1871, and was at that time made in Paris, the very best by Poirrier.

In 1871 I dissolved partnership with my partner, went over to Europe, and took the agency of A. Poirrier for the sale of his aniline dies, archil dyes, cudbear, etc., in this country, and associated with my present partner, Adolf Kuttroff. In this position, as the sole agent of Poirrier, we introduced his methyl violets, his blues (but his blues were not very good; he couldn't make them as well as the English), his methyl green (which was extremely good; it was in crystals; I believe he was the very first one who made it in crystals). We sold these dyes until 1873—nearly the end of 1873.

Meanwhile saffranine came in. The first we knew of saffranine was a dyer in Paterson, a Frenchman, came and asked us whether we had any Perkins purple left on hand. We said, "Yes." "Well," he said, "I should like to buy it." "All right." He bought all we had. Very soon afterwards the New York dyeing establishment (Mr. Young) came in. "Did we have any of the purple left?" I said, "Yes, I think we have; I don't know; I will see. If I
37 have not, I can get some, I believe." "Well, get some." We ransacked the city and we found some old jars in which were some old dyes that had been standing there for years. We bought them and sold them to him. Then I asked him what they used them for, and he said saffranine. That was the first I heard of saffranine. It was made from Perkins purple. Very soon afterwards, of course, we imported it under the name of saffranine; but first it was made

of Perkins purple and of old residues which had been standing very long and which were good for nothing else.

In 1873 I made an arrangement with the Badische Analin and Soda Fabrik, of Mannheim, Germany. We gave up the agency for Poirrier and took the products of the Badische Analin and Soda Fabrik. I will mention here that Mr. Poirrier and I are very good friends yet. We had some reasons why I gave up. He has been very sorry for it from that time, and I don't know what I should say on my part. We continued to import these aniline dyes, and in the year 1879 a new green was invented by a chemist whose name is Fisher; it was called Victoria green or malachite green, and I have seen it stated in books to be green of bitter almond oil, because it is made from benzole, and artificially made into bitter almond oil and then converted into this green.

In 1875, being in the laboratory of the factory, with which I was then and am now connected—that is, the Badische Anilin and Soda Fabrik—the head chemist of the factory, Heinrich Caro, asked me one day, we being in the laboratory, speaking of this and that, he pulled out a drawer and showed me some dyes and said:
38 "What do you think of these dyes?" I said, "Well." He said, "They are fast." I said, "Well, they don't show much, but if they are fast it is worth while to mix them up; they show like an archil purple; they have the dirty look about them." I said, "If they are fast, work them up, because we need them, and they will be valuable." Now, he is a man who is a little peculiar; he didn't work them up but left them in his drawers. In 1877, all of a sudden, these oranges came out, and this orange II first. It was introduced into the trade by Poirrier, and it was invented or claimed to be invented by Roussin—Zacharie Roussin. Mr. Roussin was some eminent chemist, who had been working on a certain class of dyes, and he brought out this orange II into the market, and very soon afterwards the orange IV. These were introduced into the market and created quite a sensation in the trade, because they are now the azo dyes; the azo compounds have been utilized, and this was the first of the azo dyes. That opens a new field for aniline dyes—not for aniline dyes—for artificial dyes. All the chemists set to work to try to make some. The very first one who succeeded after Poirrier, or of Roussin, was Baum, in the factory of Farbwerke, vormals Meister, Lucius & Brueing, who brought out a scarlet in ponceau; that was made by Baum in Hoechst. I will mention here that among all the dyes the red is the most important dye; there is more red used and more demand for it than any other dye. I believe more demand for it than all the rest together.

Q. Was it in 1878 you put the ponceau?

A. 1878. He (Baum) brought out the first azo compound
39 and called it ponceau, the first fast dye—the first scarlet. Very soon afterwards—of course, Caro was working at it, and he brought out this naphthylamine red; this naphthylamine red has a little different character to what the ponceau has of Baum, and they are two colors, two dyes, which go side by side in the dye-house. Since then some more azo dyes were introduced; notably one by

what might be called the father of azo dyes and azo compounds—Peter Griess. Those which Caro showed me in 1875 were samples of dyes which had been sent to him by his friend Peter Griess, who was in London, with the request that he should see whether it had any commercial value, and Caro, of course, neglected to investigate or press the thing until Poirrier came out with his ponceau. Peter Griess came out with anisol red. Anisol red might be called the type of the dyes of the azo compounds—of the azo dyes. It is the most beautiful scarlet, and has characteristics superior to any others, but it is high in price, and these other cheaper dyes have driven it out of the market. We do not import it any more; we used to import it, but we had to give it up; we couldn't compete with it against the other dyes. Another diazo compound has come out; that is a scarlet that has taken a great lead, but I think it is only a cheaper way to make the anisol red of Griess—that is, of course, not made from anisol, but it answers the same purpose.

When we had the so-called azo dyes here first and tried to introduce them we offered them in the market and tried to introduce them as substitutes for principally cochineal and similar dyes which dye these scarlet reds. The carpet people—manufacturers of car-
40 pets—who wouldn't touch aniline dyes because they were so fugitive, we had great difficulty with, to convince them that these were different dyes from aniline dyes in order to make them take them; and they have taken them. I asked the other day a broker of this city, a prominent broker in dyes and chemicals, "How is cochineal now?" He said, "Well, the price is about thirty cents a pound for the same thing what we used to sell a few years ago for a dollar." I said, "How is the importation?" "Well," he said, "we imported usually here in New York about 12,000 bags. Now, not 2,000 are coming here." Said he, "Since your new dyes come in here—see that carpet factory over in Yonkers, as regular as clock-work they would come around about every four weeks and buy some 5,000 bags from us. Now they use your dyes, and we sell them five bags in a quarter of a year."

Q. You will please continue the history of aniline and other coal-tar dyes.

A. I omitted to mention in my story that in the year 1866, 1865 or 1866, I introduced the aniline black. A gentleman came over from Europe—a chemist; he was recommended to me by Roberts, Dale & Co., of Manchester, England. He came, as he told me, for a special purpose of introducing the printing and dyeing of aniline black. I took him to the print works, firstly, of Providence and the neighborhood, and introduced him there to my customers and friends, and stated the object, and told them, "This gentleman will stay here in your factory and show you how to produce this black, and any materials you need for that purpose I will furnish you on application." I did the same to the printers in Lowell, Massa-
41 chusetts, in Lawrence, Massachusetts, and in Manchester, New Hampshire—in fact to the print works all around.

The aniline black is produced on the cotton fibre by impregnating it with aniline oil, or rather the salt of aniline oil—that is, the

tartrate of aniline or hydrochlorate of aniline. The tartrate of aniline is the aniline oil decomposed by tartaric acid; the hydrochlorate of aniline is aniline oil decomposed or saturated and combined with muriatic acid. These are now called aniline salts; the oil has had the acid applied to it, and by decomposition by the acid has turned into a salt—either the hydrochlorate or tartrate of aniline. This aniline salt is applied to the cotton fibre, especially the cotton cloth, in connection with an oxidizing agent. The oxidizing agent has to fill two offices; one office is to help turn it black within a short time, and another office is to prevent the salt from decomposing the fibre to turn it to black and to prevent decomposing it—rotting it. The first applications of the aniline oil or aniline salts on cotton cloth had this effect—that they made beautiful black prints, but after they had been lying on the shelves in the warehouse or in the stores it was found wherever it was black that they were rotted, and it could not be used any more. The oxidizing paste which we at that time furnished along with the aniline salts (or aniline oil, where the printer himself made the salt) was a preparation of chromate of chromium. The introduction of this black was very successful, and since that time aniline blacks have been printed down to this time. The peculiarity of this aniline dye—this aniline black—is that the more you wash it with soap the handsomer it grows. You can call it really a type of a fast dye.

42 Defendant's counsel:

Q. Do you say you "can" call it?

A. You can. We have since that time made aniline oil into a pigment—that is to say, we oxidized the oilor the salt of the aniline and made it precipitate in the form of black, a pigment which is also used for the very same purpose; but in place of dyeing on the fibre it is printed on the fibre—fixed with albumen on the fibre. Those are the two aniline blacks which have been introduced and which have been known in the trade and are known now.

There is one thing which I can say, the aniline oil has to be purified so as to be free from any admixture of toluidine. If there is toluidine in it you get a greyish black—a dark greyish black. If you get the pure aniline—that is to say, that aniline from which the toluidine has been separated and all the admixtures which are in the natural aniline oil or as it comes out of the distill—it makes the pure bluish black like velvet.

In the latter part of 1868 the great inventton was made in coal-tar dyes by two German chemists, Charles Graebe and Charles Liebermann, by inventing and producing from the product of coal-tar—coal anthracene—a dye-stuff which is a substitute for madder. It is called artificial alizarine. I think it ought to be called artificial madder.

By Mr. SMITH:

Q. Well, alizarine and madder are the same, are they not?

A. No, sir; they are not.

Q. Don't they call all pure madder alizarine?

43 A. No, they are different. Madder is a root growing in the levant, around the Mediterranean, the south of France, in Turkey, in Alsace, in Holland, in Egypt, and in India. But the peculiarity in East India madder is that the Persians and the people in India, who have used it for centuries and centuries, can make a perfect fast dye from it, while we here in this country or Europe cannot use it for that purpose. We could not make the East India madder work—that is to say, we could not make a fast dye from it. The East India madder is called munject. There is something peculiar in the East India madder which we do not know and which we cannot overcome, and consequently can't use it; and those people, the old Egyptians, used it for their mummies, and you find it now a fast dye; when you take the wrapping away from the mummy you find it yet. There is something peculiar about dyeing black. Black is a very easy thing to dye, as some people think. Now, we are not able to dye a black as they dye it in China. The Chinese dye a black in China to-day which we are not able to touch. Some of my friends have tried all possible means to get into a Chinese dye-house to see how they dye black and haven't succeeded. I may say the same thing, with a modification, of the way the Japanese dye indigo. The Japanese dye indigo with a black bloom in a peculiar way, which we cannot imitate. The idea is that they use alcohol in their dye bath, but I have seen samples of Japanese silk, dyed in Japan, which we could not dream of dyeing. In connection with aniline black I should say we have tried to dye cotton yarn with salts of aniline,

44 but the success has not been very great. The fibres in the yarn hang too close together, and we cannot separate them far enough; they burn up; and yet, at the same time, some have been producing a pretty good black aniline. Now, when you have a piece of cloth and impregnate it with aniline black made from aniline oil or salts of aniline and the proper oxidizing agents you can separate these fiibres, one piece from the other, and let the air or the heat strike through them and the black develops beautifully. This sample that I now produce is a piece on which is printed aniline black and artificial indigo; both are made from the products found in coal-tar; one is aniline oil, as pure or as free from admixtures of toluidine and other substances as possible, and the other is made from toluidine. The toluidine is treated by a certain process and turned into artificial xanthogenate of soda, and that turned into other products until, at least, we have what the chemists call ortho-amido-phenol, and propriolic acid mixed with an oxidizing agent such as glucose, grape sugar, and applied on this cloth and heated, when this beautiful blue comes. This blue is as fast a dye as any in the market, but there is a great difference between the two colors; both have to be developed in the same manner, but the black requires moist heat—that is to say, in a room where there is steam in it, moisture—and the other, if you develop it in the same room, will degenerate and become grey; it requires dry heat.

By defendant's counsel:

Q. When was artificial indigo brought out?

A. In 1881, by Professor Baeyer. Now, this artificial aliza-
45 rine, of which I have been telling you, or artificial madder, created quite a disturbance in the manufacture of artificial dyes and in the growth of natural dyes. We imported it. I introduced it. I was the very first one who had it here and introduced it here to the printers, and it happened very similarly to what has happened again—the same story over again as with the aniline red. They wouldn't take it. They were so bound on madder or madder preparations that one found this fault and another found that fault, and another found another fault, and so on, and it was a very hard work indeed to make them understand the artificial alizarine. It was invented in the latter part of 1868, and it came in in 1869 or 1870; it was particularly introduced in 1871. In 1873 I devoted several months among the calico printers to show them how to use it and to influence them to use it in place of madder. I succeeded in the latter part of 1873, and from that time the consumption has increased, and has increased in such manner since 1873 that I must say I have had pretty plain work. In 1873 I made them understand it. It has increased so much that madder is hardly used any more, while the price of madder, which was at that time about ten to twelve cents a pound at the average price, and garancine, which is a preparation of madder, was about thirty cents a pound; the madder is sold here in this country now—the little which is used for various purposes—for two or three cents a pound and the garancine at six or eight cents a pound, and they can't sell it.

This artificial alizarine has had, I may say, in one direction in itself a drawback for its use. We made it too easy for them
46 to use it. In place of the dye vat they use it in printing, as this sample has been done, and the use has fallen off quite considerable. Formerly it took quite an intelligent man, and a man who had learned his trade thoroughly, to be a madder dyer, to dye madder prints. Some print works here in this country, especially the Merrimac Printing Works, the Sprague's, the Manchester Print Works, the Pacific Mills, and the Cocheco Print Works, prided themselves on fast colors and fast dyes—guaranteed madder dyes. Well, they have deteriorated now very much, and in place of taking a pride in making only warranted fast dyes they have used all kinds of stuff, especially aniline dyes, and make it cheap for the trade and to their own ruin and to the ruin of the trade and every one. The print business has been a very poor business for the last few years, for the main reason that they did not stick to the good color, and substituted for the good colors the aniline dyes—among other things, the resorcine red—this here—which is a very fugitive thing. In 1878, I think it was, Professor Bayer invented and produced this green of which I have been telling you this morning—the coeruline. It is a peculiar green and it is perfectly fast. It is made from phtalic acid. You see it is a very dull green on yarn, and yet that is the only green which is produced up to this day—a direct green and a fast green. This is artificial alizarine dyed with a mordant, which is called a lime mordant, a mixed red

(afterwards marked for identification J. H. F., 29). This is another artificial alizarine, which is dyed with bichromate of potash as a mordant.

47 I should mention to you here that, although madder and madder preparations, especially madder, is considered a dye-stuff; of course it is a dye-stuff, because people dye with it, and yet if you would take madder and use it as a dye the same as you would some other dyes, especially fuchsine, you would not get any color at all. It requires a vehicle to bring forward the dye, to bring forward the color, to bring this into a red and this here into a purple. Now, that vehicle in this case is lime, and in this case is bichromate of potash.

(The purple sample is marked for identification J. H. F., 22.)
(The red sample is marked J. H. F., 23.)

A. (Continued). The aniline black is applied in the shape of gray salt dissolved in water, which is a clear liquid—a neutral. If you immersed the fiber in it, it would not dye at all, because it requires an oxidizing agent to develop it into black.

(The coeruline green is marked for identification J. H. F., 24.)

A. (Continued.) At about the same time the coeruline was brought into the market another dye of the same class, and in fact produced along with the green, was this dye called gallein.

(The gallein sample is marked for identification J. H. F., 25.)

A. (Continued.) It is also made from phtalic acid and another substance, which I cannot recall the name of now.

By defendant's counsel:

Q. That is about 1878?

48 A. About 1878. In the year 1875 another beautiful dye came out; it was produced from phtalic acid and resorcine. Professor Baeyer, who worked on phtalic acid, very exhaustively pursuing his investigations, left it to Heinrich Caro, who took — up in turn, and that product which Baeyer had left became a beautiful red dye-stuff—resorcine red or cosine.

By plaintiffs' counsel:

Q. The cosine which is represented by one of the plaintiff's samples?

A. Yes, sir; that is the sample. The name cosine is a fancy name. It is under certain conditions in solution, for instance, the shade of the morning sky as the run rises or as we see it now, lately, in the evening.

By defendant's counsel:

Q. Do you think this color in the evening sky of late is due to the introduction of this new color?

A. I can't tell you that, Mr. Root; but this red has a great resemblance to that, and therefore it is called cosine. This resorcine

red is to-day a very important dye, but it is mainly used for the purpose for which we did not intend it at all. When we had it first I happened to be over at the factory, and we thought it would be a substitute for safflower or safflower extract, and we did all possible trials make with it to see whether it would answer, and it didn't answer. There was a question whether the resorcine should be patented. After long and careful investigations and a great deal of deliberation it was decided not to patent it, because it was
49 considered to be a small dye, and it was decided to keep the thing secret and sell little of it, as probably the best way. It is now used very largely for wall-paper and for painting of agricultural implements; in fact, wherever you see a beautiful red paint now—a red paint with a beautiful bloom or lustre—you may be sure this resorcine red is in it; in fact, it is used for very many purposes. It is used, among other things, to stain paper with. If you dissolved it and used it as ink you could copy with five or six or a dozen sheets all right through. One of the newspapers, the Evening Telegram, which is a peculiar reddish hue, is dyed with this resorcine red. For dyeing purposes it is used some, but not much. The main thing is paint. It is used in the manufacture of paints, and you see it everywhere. That came out in the year 1875 or 1876, and it is used pretty largely. I now come to the artificial indigoes. I have mentioned the aniline dyes; I have mentioned the resorcine, the coralline, the coeruline, the alizarine, and the anthracine dyes. I think there is only one thing left, and that is the artificial indigo. Artificial indigo came out, I believe, in the spring of 1881. I could tell you exactly when it came out by reference to some copies of patents I have here, if you will be so kind as to show them to me. (Examining a paper.) This patent is dated October 19th, 1880, and the application was filed on the 6th of April, 1880; so it came out in the first few months of 1880. Professor Baeyer, of Munich, had been years making great researches of indigo, indigotine, indo-satin, and so forth. He published his researches in 1872 or 1873—about that time—and left it to the world to find out indigo, but it didn't,
50 although every color chemist was trying to find out artificial indigo, but failed; and in 1880 Professor Baeyer took up his work again, which he had left eight or nine years before, and made one further step in his work, and the indigo was there. Now, this artificial indigo was something peculiarly beautiful and peculiarly pure, but the production of it is a little higher than the people in the East Indies can make the natural indigo, and the main reason for it is that only one part of the benzole or the toluidine can be used for making it and the other parts cannot be used. As soon as it shall be discovered that the other parts which are left as refuse can be utilized, the production of artificial indigo will become so much cheaper that we can bring it into use. We have imported some, but not to any extent; but the main reason why it has not been used particularly is not so much the higher price as the offensive smell which it has by combining it with the oxidizing agent—zanthate of soda. Now, to overcome this offensive odor is a very

hard matter, although they make a beautiful dye from it, and here is some of it. It is the best blue ever produced.

(The sample is marked for identification J. H. F., 26.)

A. (continued). Here is another blue and an aniline black.

(The sample showing two colors is marked for identification J. H. F., 27.)

A. (continued). Here is another print in blue—an artificial alizarine.

(The sample is marked for identification J. H. F., 28.)

51 A. (continued). Here is another print in artificial alizarine and artificial indigo.

(The sample is marked for identification J. H. F., 29.)

A. (continued). Here is a sample printed with artificial alizarine and aniline black.

(The sample is marked for identification J. H. F., 30.)

A. (continued). Lately there has been discovered and produced a new green. It is the green that is shown on one of the cards, and is called Victoria green. (The card marked for identification A.) That is the perfection of green. Still later—and that is the very last—new violets and new blues have been discovered, and they are now in the process of production. We have taken patents out for them here, but we have not got them introduced largely into the trade; but they will very soon be, and they seem to be destined to drive all the old aniline violets which have been in use up to now entirely out of the market; and also the blues. That is a new discovery. It was made also from coal-tar, in August, 1883. As to this green shown on the card marked for identification A the old green you would think was black or gray beside it. You would think it was not green at all. This is the perfection of green. I do not recall at present any more of those artificial dyes which have been invented and produced since the year 1861 till now. When these dyes were brought here successively into the cus-
52 tom-house we had to pay the duty on them as it was levied. The first recognition, as far as I am aware, was in 1864, when there was a duty levied on aniline dyes of one dollar a pound and thirty-five per centum ad valorem. At that time aniline dyes were very high-priced articles. In 1864 I sold the aniline red at from $25 to $35 a pound, and the violets for probably $35 a pound; it may have been $30; I can't tell exactly; but they were very high-priced—all these aniline dyes. A dollar a pound on the colors at that price wasn't much, but they have gradually and gradually gone down and down, all the way down until, as I told you this morning, that very same red is sold now at $1.80 per pound, with a duty of thirty-five per cent.

By defendant's counsel:

Q. That is under the new law?

A. Under the last law of 1883 the duty is thirty-five per cent.; there is no other duty; the fifty cents a pound was taken off in the last tariff, and only thirty-five per cent. we pay now for that dye. When the new law since 1874 was made, saying aniline dyes, under whatever name known, then very soon some trouble commenced. We had been in the habit of importing the pigment or pigment colors used for paper-stainers and for decorative work—I don't see any in this room—which were made by aniline dyes and by cochineal and by wood dyes. They are put on the market as pigment dyes or paper-stainers' colors. Paper-stainers' colors were specially provided for at $35 per cent. ad valorem. We manufacture them. All of a sudden, when we had an invoice in the custom-house, the
53 report came that they didn't pay duty enough—more duty. "Well, what's the reason?" "Well, some of those dyes are made with anilines or aniline dyes, and they may be called aniline colors, and you must pay besides the 35 per cent. 50 cents a pound." "Ah," I said, "that's a funny thing." We sell these for 30 or 40 cents a pound, and to pay 50 cents a pound duty on them that was rather much. With thirty-five per cent. ad valorem duty we sold them for 30 to 40 cents a pound. We made inquiries and found a decision of the Treasury Department, or a ruling of the Treasury Department, that these colors which had been made from aniline dyes ought to pay the aniline-dye rate of duty. There was a man here in New York who imported Payne's ultramarine blue and vermilion, and he commenced to make some of these colors in this city or over in Brooklyn, Long Island. He conceived the idea in his head that these colors, probably, in place of paying thirty-five per cent. only, with 50 cents a pound on them, — would be a nice thing for him to shut out their importation. He imported a lot of them, and when he had imported them he went to the customs officials here: "Now, here, I don't want to cheat the Government; I don't know what rate of duty I should pay on these colors."

Doctor CHARLES F. CHANDLER, being duly sworn and examined as a witness for the plaintiffs, testifies:

I am a chemist; studied at Harvard College and Gottingen and at Berlin, and at the present time am professor of chemistry in Columbia College, the School of Mines, the College of Physicians and Surgeons, and the College of Pharmacy, and have for more
54 than twenty-five years devoted my entire time and attention to the profession and occupation of chemistry; have had my attention especially called to the subject of colors, chemically considered, and the production of artificial colors ever since I fairly embarked in the study of chemistry. I have been employed as an expert in several patent litigations in regard to the preparations of the artificial dye-stuffs. Aniline is a liquid, usually called an oil—aniline oil. It was first prepared by peculiar treatment of indigo, and received its name from an old name for indigo—ansil—so that it

might be called a sort of indigo oil. It is, chemically, a compound of amidogen and phenyl, so that the chemical name for it is phenylamine. This discovery was made over thirty years ago. Aniline is produced by treating benzole—derived from coal-tar—first with nitric acid, to make nitro-benzole, and then with iron and acetic acid, to make aniline. I am familiar with the class of colors known to chemists as aniline colors. The greatest variety of materials are obtained from coal-tar, some of the principal ones of which are benzole, toluole, xylol, cumole. It furnishes napthaline and anthracene and phenanthine and crysen and pyrine. It also furnishes phenol, or carbolic acid; cresol, or cresylic acid. Those are a few of one or two hundred different substances furnished by coal-tar. Each is a separate and distinct compound. There are a large variety of colors obtained in the ordinary way of manufacture from coal or coal-tar and from the different products thereof. These colors can be divided into classes, and are customarily divided among chemists into classes.

I know a color called fuchsine which is made by treating
55 crude aniline oil with arsenic acid and hydrochloric acid. I know a dye called Hofman's violet, which is made by treating rosaniline with iodide of methyl and iodide of ethyl. I know several dyes having different specific names and which dye blue and being from the product of coal-tar, which are made, the most part of them, by treating aniline red with some more aniline. If the quantity of aniline employed is small, then the result is a purple color, and if it is large, then the result is a blue color. The purple is called Victoria purple. Fuchsine is an aniline dye, and was discovered in 1856 or 1857. It was known in 1870, and was and is an aniline dye. Hoffman's violet was discovered soon after, and was an aniline dye and is an aniline dye. The blues and purples that I have spoken of were discovered soon after, and were and are now aniline dyes. In trade they have all sorts of names. Chemically, the Hoffman violet is methyl-rosaniline or ethyl-rosaniline, with different quantities of methyl or ethyl, which give the varying shades. The blues and violets have another character, and are produced by the action of aniline on rosaniline or fuchsine. They are phenylated rosaniline, and they vary in shade from purple to a pure blue. They were known in the trade as opal blues and night blues and Paris blue and Lyons blue, and each one of them has a dozen different names given to it by different dealers. There are aniline dyes producing greens. The most important are produced by the action of iodide of methyl on rosaniline. They were known in 1870. There were other aniline dyes in 1870. There was an aniline yellow called phosphine, and there was an aniline brown called Bismarck brown.

There is an aniline black which does not appear in commerce
56 as a dye, but it is produced in the fabric. The aniline black is a color, the materials of which are put into cotton cloth and made to combine in the cloth and develop the aniline black. Picric acid is another material altogether; it is the result of treating carbolic acid with nitric acid, and its chemical nature is trinitrephenol; this is not an aniline dye; it is a dye; it was known in 1870; it is derived from phenol or carbolic acid, which is obtained

from coal-tar. There is a dye called Victoria yellow; it has been known a long time; think it was known in 1870; it is a phenol color; it is not an aniline. Martius yellow is another phenol color, not an aniline dye; it is a dye; think it was known in 1870. Aurine and rosolic acid are properly phenol colors; they have been known a long time; prior to 1870; they are not aniline dyes.

By defendant's counsel:

Q. What do you mean by the term aniline as you are using it now—aniline dye?

A. I mean a dye which is made from aniline or contains the essential constituents of aniline, or is similar in any way in constitution to an aniline dye. Another class of dyes, derived from coal-tar product known as eosine, were really discovered in 1873, but they were kept secret, and they were put upon the market in the summer of 1874, but the process of making them and their character were kept secret, and it was not until 1875 or 1876 that chemists, by investigating them, found out what they were; so that, although they were discovered in 1873, it was 1876 before their real nature was
57 ascertained. They were not patented, but were manufactured secretly. They are not aniline dyes; they are phtalic acid dyes; they are all derived from phtalic acid. I am familiar with resorcine red; it is prepared from phtalic acid; phtalic acid is prepared from naphthaline, and naphthaline is extracted from coal-tar; naphthaline exists in coal-tar, and it is extracted and then converted into phtalic acid, and phtalic acid is treated with resorcine and then with bromine, and the result is a combination of bromine, resorcine, and phtalic acid, and the combination is called either resorcine red or it is called eosine, because it is a color which is like the color of early dawn. Eosine refers to the aurora red or early dawn, and that is the origin of the word eosine, the name by which the color was first known—eosine or resorcine red. It is used in printers' ink, and as a pigment for putting on house paper and paints and that class of materials. It is used for coloring pigments chiefly. It is the first of the phtalic acid colors, discovered in 1873, and put on the market in the summer of 1874, I think it was; but it was a secret preparation. It is not an aniline color. There are colors prepared from naphthaline. The method that would apply to a particular class to which naphthaline red belongs consists essentially in producing a compound which is known to chemists as a diazo compound. Di means two; azo is from the French word azote, which means nitrogen; so diazo means two atoms of nitrogen, and the general process consists in compounding two atoms of nitrogen with some one of the aromatic bodies obtained from coal-tar. Compounding the two atoms of nitrogen with the aromatic body confers upon it the
58 power to immediately enter into combination with another aromatic body. So these diazo substances—aromatic substances, with two atoms of nitrogen—are very active in forming combinations, and they, if brought into contact with other aromatic bodies, immediately unite with them and produce what are called azo compounds. Of these we have a large class—azo compounds, azo dyes—

produced by the action of the diazo substance upon the greatest variety of aromatic bodies. This particular one is called naphthaline red. It has a dozen names. In Paris they call them roccelline, because they are used as a substitute for rocella, which is a weed which grows on the rocks. Roccelline or naphthaline red is produced by treating naphthaline that comes out of coal-tar—first with nitric acid, to make nitro-naphthaline, then with iron and with acetic acid, making a naphthylamine or amido-naphthaline, and then with nitrous acid to make diazo naphthaline; this diazo naphthaline is then treated with sulphuric acid, or it may be treated, before it is diazoed, with sulphuric acid, and that makes a diazo naphthonic acid, which is brought in contact with another derivative of naphthaline, called naphthol, which immediately unites with it, and we have the red: so this red is produced by uniting the two groups of naphthaline by means of two atoms of nitrogen, which is a characteristic feature of all the azo colors and which leads us to call them the azo colors—from azo, the French of nitrogen. This particular color was discovered, I think, in 1878, and the whole class of naphthionic colors was discovered first in 1878. I think about
1876 they began to make azo colors; they were not known in
59 1870, and as a commercial article they were not known in
1874. Naphthylamine red, I think, was patented in 1878. It never was and is not now an aniline color. Orange II is an azo color, was patented in 1878, and is made by bringing diazo-benzole sulpho-acid in contact with beta-naphthol. Beta-naphthol is derived from naphthaline and is the same naphthol as used in naphthaline red. There are two naphthols—one is called alpha-naphthol and the other beta-naphthol—A and B naphthols. Orange IV is an azo color, too, and is made from benzo-sulpho acid diazoed twice and then combined with diphenylamine. It was patented in the same patent as orange II, and is made by treating sulpho-benzoic acid with diphenylamine. I should have used the term benzo-sulpho acid instead of sulpho-benzoic acid. I have examined the patents covering the orange II and orange IV issued in this country, and have made dyes according to the specifications of that patent. Neither of them are aniline dyes and were not aniline dyes in 1870 or 1874; they were not known then. I have made no chemical examination of the samples of dyes furnished me by Mr. Carl Pickhardt; I know the dyes perfectly, but of those particular bottles that Mr. Pickhardt gave me I have never made a chemical examination of them. I know the dyes and I know what the firm sells; I have bought samples of them without their knowledge for examination with reference to patent suits involving the patents for making them; have examined the orange II and the fast red and found them to be the dyes which I have described. I know the colors produced by aniline dyes. There is a distinction in the class of colors produced by the aniline dyes and by the azo dyes; the
aniline colors generally produce shades of violet or of purple or
'60 of a purplish red, or else of blue or green; blue-green and
bluish reds are the characteristic colors of aniline dyes. The characteristic colors of azo dyes are yellows, oranges, and scar-

lets The red colors derived from aniline dyes are on the yellow side of red—that is, red between yellow and blue—and the yellow side of red is scarlet. That is the azo colors. The azo colors are scarlet; the blue side of red gives us all the purple shades, or rather there is a purplish red, then a reddish purple, then a purple, and then a bluish purple, and then a violet, and then a blue. Those are aniline colors—aniline shades. And then we have a special class of aniline greens. There is an aniline yellow called phosphine; it is prepared from the refuse of making aniline red, or fuchsine, by treatment with caustic soda. We get a yellow dyestuff which is in some way nearly allied to fuchsine or aniline red, but the constitution of it has never been satisfactorily determined by chemists; so we don't know the exact constitution of aniline yellow or phosphine. It is different from all the other aniline colors; it was not worked out by chemists but was discovered by the accidental treatment of aniline residues. We know the number of atoms of carbon, nitrogen, and hydrogen in it, but its structural composition, its "constitution," as the chemist says, has not been worked out. We don't know whether it is an azo color, but an aniline that dyes yellow is an aniline in connnection with its other known results. All I know is that it is manufactured from residues obtained in the manufacture of aniline dyes. Naphthylamine red dye takes the place of cochineal and lac. I have seen it stated that there has been
61 a decrease in the consumption of cochineal since the discovery of that naphthylamine red, but I have no knowledge of my own on the subject. The first color you asked me about was, I think, the resorcine red. That resorcine red is made of phtalic acid, of which this is a specimen, and the resorcine, of which that is a specimen, and the combination is afterwards treated with bromine; so a resorcine red is derived from phtalic acid and resorcine. The next color you asked me about was naphthylamine red; that is derived from naphthaline, which is the refuse of the gas works, and that specimen is a piece of it just as we got it. It hasn't been purified at all. That is crude naphthaline from the Municipal Gas Works, and was taken out of the gas pipes just as you see it. When it is purified it has the appearance of this sample; it is crystallized, and that is the way it is found in colors or the way it is manufactured by the manufacturers. That is converted into naphthylamine, of which this is a specimen, and that is treated with sulphuric acid and is converted into naphthionic acid, that is diazoed and brought into contact with beta-naphthol, of which that is a specimen, and that produces naphthylamine red. The next one that you asked me about was the orange II. That is made from sulphanilic acid, and the sulphanilic acid can be made in various ways. In one process it can be made from aniline, and hence the name sulphanilic acid is applied; but aniline is not essential, for it can be made without aniline; it can be made simply from nitro-benzole
62 sulpho acid. It is called amido-benzol sulpho acid or sulphanilic acid. It is sulphanilic acid, whether made from aniline or not. Sulphanilic acid is one of the names by which it is known. This specimen is amido-benzol sulphonic acid. This is

diazoed, and then it is ready to enter in the combination, and by combining that with beta-naphthol it produces the orange II. They are not in commerce; these materials cannot be bought. They are manufactured by the factory that makes the colors, so that it is very difficult to get them, excepting there may be some factory that will furnish them. They are not commercial articles. There is a firm in Berlin that undertakes to furnish them as curiosities to colleges. They make them in that way. The sulphanilic acid is diazoed, and that destroys the sulphanilic acid and makes the diazo-benzole sulpho acid. By diazoed I mean combined with two atoms of nitrogen. That makes orange II when combined with beta-naphthol, but it will really make a hundred different colors, because the moment the sulphanilic acid is diazoed it is capable of entering into combination with any other phenol that is known or with any amine that is known, and then they have a great range of colors—different shades of red and yellow. This particular shade of red or yellow is obtained by combination with beta-naphthol. The last color you asked me about was orange IV. That is produced from the same sulphanilic acid by diazoing, and then bringing into combination with diphenylamine, of which that is a specimen. The sulphanilic acid of orange II and orange IV can be made from aniline or without aniline. Practically, I think they are made from aniline, but I am
63 not sure; those are trade secrets; it ceases to be aniline the moment it is diazoed. The essential constituents of aniline exist in aniline red and blue; the essential feature of aniline is the presence in it of the group of amidogen, which is the combination of one atom of nitrogen and two of hydrogen; the name amidogen means the generator of amides; it is the NH_2, which is the essential characteristic feature of that entire series of aromatic compounds, and it ceases to be an aniline when that NH_2 has been withdrawn or essentially modified in the group; it is not an aniline color; but take any one of the aniline colors, there is no aniline in it; a new chemical article has been made, but the essential feature of aniline has not been destroyed, because the amidogen is still in there; the same as you would take nitric acid and lead to make white lead; the white lead is a compound of lead and nitric acid, and nitrate of lead is simply another compound of lead; there is no metallic lead there, and yet it is a compound of lead; it is not as distinct from lead as any two chemicals can be, because you can get lead out of white lead and out of nitrate of lead, and, therefore, there is a resemblance between the two which there would not be between white lead and nitrate of copper. My acquaintance with aniline dyes is a purely scientific and chemical acquaintance. I have no knowledge of the trade only in so far as I have procured samples of everything that is sold in the trade, and have a collection of them, and have examined them from time to time. I have never bought and sold them. I was on the committee of the Centennial Exhibition at Philadelphia to which the colors were referred, and I se-
64 cured the best exhibit there was at the Centennial from one of the largest manufacturers in Germany of everything they

exhibited there, and I have it still. I have from time to time secured copies of price-lists, as far as practicable, of all the dealers in colors; have done it ever since these colors came into the market. I was very much interested in them, and as soon as I saw an account in the journals of the first aniline colors I had my assistants make some of it, more than twenty years ago, at Schenectady; that catalogue that you have in your hand is the catalogue of my collection. I knew about aniline colors commercially prior to 1874 or 1870; had obtained their catalogue, and kept myself familiar with the whole subject as far as practicable. Aniline is amido-benzole or phenylamine; in practice it is six atoms of carbon, five atoms of hydrogen, one atom of nitrogen, and two more atoms of hydrogen; that is $C_6 H_5 NH_2$. The most important of the various aniline colors referred to as existing prior to 1870 are the rosaniline salts, which are chemically known as fuchsine or magenta or solferino or fifty other names; aniline red, that is usually the hydrochlorate of rosaniline; then they put the acetate on the market, and the arseniate, and the sulphate, and so on. Rosaniline is made by treating crude aniline, which is a mixture of aniline and toluidine, with arsenic acid and hydrochloric acid, that yields hydrochlorate of rosaniline or fuchsine. All the colors known before the act were derivatives of rosaniline; they could not be made from what a chemist calls pure aniline, but from commercial aniline, which is a mixture
of aniline and toluidine; toluidine is derived from another
65 hydrocarbon than benzole; benzol and toluol, when nitrated,
make nitro-benzol and nitro-toluol, and when reduced they make aniline and toluidine, and the crude oil sold in commerce is a mixture of the two.

Q. I think you mentioned some colors which you said were known before 1870—picric acid and Victoria yellow and Martius yellow, etc. Is aniline employed at all in their manufacture?

A. No, sir; not at all. They are all nitrated phenols and have not the characteristic constituent or principles of aniline in them. I don't think any one of them has ever been called by an aniline name. The dealers in aniline dyes head their price-lists "Aniline dyes," and they put into them indigo and carmine and cochineal and lac, picric acid and stannate of soda, which is used as a mordant, and all sorts of things. On a price-list you generally find all that a dealer sells, and as the aniline colors are the characteristic things the dealer puts that on top and then puts on the sheet his aniline colors; and then if he furnishes his customers with mordants for fastening colors he puts those on too; and if he deals in some of the vegetable colors he puts them on the same sheet, and yet they are all under the heading of aniline dyes. I have several of them.

Q. I asked you to enumerate the aniline dyes, using the phrase in the sense that you have used it on the direct examination—the aniline dyes known prior to 1870, giving the trade names, if you
know them, the specific names for each color.

66 A. It is rather difficult to do that, for each manufacturer has his own trade name—aniline red or rosaline hydro-

chlorate, also called fuchsine, also called solferino, called magenta, called rosa, and I don't know all the other names. Colors have a great variety of names, but do not generally indicate any difference in shade. They are trade names. I presume the original manufacturer when he got a customer wished to make him think he could not get it from anybody else; so that each dealer, as far as practicable, used a peculiar name; and then when a dyer gets in the habit of using that particular color he would be afraid to buy of any other dealer for fear that he would not obtain the same thing, and I presume that is the way it has happened that so many of these names arose. I presume the object is to prevent the dyer from finding out the same colors from some other dealer, for if he could be sure he would get the same color he might go and buy of somebody else. It is true that one color would be known by a great variety of names. The next class of colors were known as Hofmann violets. He found that by treating aniline red by methyl or ethyl iodide he could change the shade; that the more methyl he used the further away from red it got and nearer to blue; and so that made a great range of dyes, and they lettered them. For instance, R is red and B blue, and aniline (Hofmann) violet would be R and R R and R R R and R R R R. The more R's the nearer it would be to aniline red, and the more B's the further it would be away from red, and the nearer to blue. They were known as Hoffman violets B, BB, BBB and R, RR, RRR, RRRR. And now we come to methyl violet.

67 Q. I don't care about any only before 1874.

A. I don't think the methyl violet was made before 1870.

Q. I say before 1874.

A. I don't remember when it came out. Then the next move in the aniline industry was the treatment of aniline red with more aniline. It was discovered that if the rosaniline red was heated with an additional quantity of aniline the same series of changes occurred as with Hofmann's methyl and ethyl—it became a beautiful purple; and that gives rise to another great variety of names; and by still further treatment a beautiful blue was produced, and it was the most beautiful blue ever known—pale blue and night blue and Lyons blue and Paris blue—a blue that was blue by gas-light and lamp-light; but the difficulty was that these blues were not soluble in water. Nicholson made the discovery that by treating these blues with sulphuric acid in a peculiar way he could make them soluble in water, and that introduced a new class of dyes, known as Nicholson's, or soluble, or alkali blues; these have a great range of shade.

Q. Was this prior to 1870?

A. I think so; it is so long ago. I think it must have been prior to 1871. Then the discovery was made that the aniline red could be converted into a green. That, I think, was prior to 1870. It was found that by continuing Hofman's process, which resulted in violets, when some more methyl was introduced into the aniline red, together with iodine, it produced the most beautiful green; and then,

68 somewhere during the early history of aniline red, it was discovered that the refuse material would furnish a yellow. That

was the aniline yellow which somehow or other has thus far resisted efforts to ascertain its true character, but it appears to be an aniline color. All these had a great variety of trade names—all of them—nevertheless they were all alike, in that aniline entered into their manufacture.

Q. In the manufacture of aniline dyes, was Bismarck brown known prior to 1870? Won't you tell how that is made?

A. It was generally called an aniline dye.

Q. Prior to 1870?

A. Yes, sir.

Q. Known in the trade as an aniline dye?

A. Yes, sir.

Q. Tell me how it is made.

A. The Bismarck brown is made by bringing together phenylendiamine and sodium nitrite and treating the product with hydrochloric acid.

Q. Phenylendiamine is made from dinitro-benzole in the same way as aniline is made from nitro-benzole?

A. In the same way.

Q. So that in aniline brown aniline does not enter at all?

A. No; aniline does not enter.

Q. And that was a dye known as an aniline dye prior to 1870; you so stated, didn't you?

A. It was discovered in 1866, and I presume it was classified under the aniline dyes without any particular discussion.

69 Q. Don't you understand that the term aniline as generally applied (not with reference to scientific application, but generally) meant derivation from coal-tar?

A. No; because picric acid was never known as an aniline color.

Q. Magdala red.

A. That is a napthaline color; nothing to do with aniline.

Q. Did that exist prior to 1870?

A. I have forgotten; it came out about the time of the Abyssinian war, and got the name from Magdala.

Q. Can you tell when that was?

A. I can by referring to my book. Magdala red was brought out in 1867.

Q. Do you know whether or not that was known in the trade as an aniline color prior to 1870?

(Objected to as immaterial.)

A. I don't know. It never was sold to any extent; it is so frightfully expensive. I have tried in vain to buy it, but nobody in the city deals in it because it is so expensive. It is not practically a commercial article. It sells for a thousand francs a kilogramme, I am told, in Europe.

Q. You mentioned in your direct examination a color called Martius yellow. Isn't that the same as yellow crystals or Manchester yellow?

A. Yes, sir; that is Manchester yellow.

Q. Is that a napthaline dye?

70 A. That is a phenol dye; it might be called a napthaline dye, too.

Q. When was it discovered?

A. It don't appear here in my book when it was discovered.

Q. Was it prior to 1870?

A. I think it was. There is a reference here to an article published in 1868 in connection with this Manchester yellow.

Q. Do you know whether that was called yellow crystals?

A. Well, it might be.

Q. Is that descriptive of it—yellow crystals?

A. It would describe a thousand different things.

Q. Is it descriptive of Manchester yellow?

A. Yes, sir; it is a crystalline powder and it is yellow; so is picric acid.

Q. And is made from naphthaline?

A. Made from naphthaline.

Q. You say it might be called a phenol or a naphthaline dye; why do you say "it may be" either a phenol or naphthaline color?

A. Because the phenols represent a class of compounds in which the aromatic group is united with oxygen and hydrogen, and all compounds in aromatic chemistry which contain oxygen and hydrogen united to the aromatic group are called phenols; so all these colors derived from phenols by the action of nitric acid can be called phenol colors, because if you attempted to classify them from the particular aromatic body — were derived from you would have to call one a carbolic acid color, another a cresylic acid

71 color, another an alpha-naphthol color, and another a beta-napthol color, but by combining them all in the phenol class you have a title which includes all, and excludes everything which is not derived from phenols.

Q. Phenol and naphthaline are two separate products of coal-tar?

A. Well, naphthaline makes two phenols.

Q. Does naphthol exist as such in coal-tar?

A. I don't know whether anybody ever detected it there or not. It might be there just as well. Every hydrocarbon of the aromatic series will make one or more phenols, according as one oxygen and hydrogen or two oxygens and hydrogens or three oxygens and hydrogens are tied to it; so the family of phenols is a very large one.

Q. I don't understand that the phenol is a hydrocarbon.

A. It is a hydrocarbon hydroxide; it has "O H" oxygen and hydrogen. Nobody knows how many different hydrocarbons there are obtained from coal-tar. I have a list at home of 637 hydrocarbons, but they haven't all been detected yet in coal-tar. There is no reason why they should not be all found there; but chemistry is only a hundred years old, and it has not been possible to identify them all in coal-tar. The different hydrocarbons from which the different dyes and colors first mentioned are taken are benzole, which is $C_6 H_6$; that is the simplest of all; that is the very beginning. Then toluol, $C_7 H_8$; then xylol, $C_8 H_{10}$; then cumol,

$C_9 H_{12}$. There is a regular progression, and they differ by
72 1 of carbon and 2 of hydrogen in that series. Then there is naphthaline, which is $C_{10} H_8$.

By defendant's counsel:

—. All these different artificial dyes you have mentioned are made from different hydrocarbons produced from coal-tar differing in the proportions of carbon and hydrogen?

A. Well, if you trace them clear back to their foundation they are. But picric acid, for instance, we don't make that from a hydrocarbon because we get something out of coal-tar—carbolic acid. Carbolic acid is derived from benzole, and we don't start with benzole to make picric acid, because we can get carbolic acid out of the tar in which the first step has already taken place. As matter of fact, the whole of aromatic chemistry is based upon benzole. It is the foundation and the very substance of it that aromatic chemistry is built up from benzole, and benzole can be built up from charcoal and hydrogen; so that if things are traced clear back to the foundation all we want is charcoal and hydrogen, and we can by proper means go on and construct everything by a process of synthesis, but it is cheaper to get these things out of natural materials.

Q. Practically all these colors are derived from coal-tar?

A. Practically it is cheaper to get them out of coal-tar than from anywhere else; not necessary, but cheaper. It was not a common quality of the aniline colors known in 1870 that they should possess any particular color or shade of color; but, as a matter of fact, the aniline colors that were known in 1870 did run in certain
73 lines of color. The colors differed. They were known by different subordinate names and specific names under the generic name of aniline dyes. I have mentioned reds, greens, blues, yellows, browns, and violets. There was no color for scarlet. I have never seen it obtained from using the aniline dyes. You might suppress and hide the aniline color by making a color of a wholly different character; but I don't know how to combine a true aniline color with any other color and make a scarlet. I don't remember any aniline orange. I think the oranges and scarlets were colors that aniline failed to furnish at all. The aniline yellow was not used to any extent.

Defendant's counsel:

Q. Why do you say "true aniline?"

A. Well, I mean the real aniline; those that are properly aniline colors.

Q. That is into the manufacture of which aniline enters?

A. Yes, sir.

Q. Now, I wish you would, taking into account the various aniline dyes which you have named as being known prior to 1870, including Bismarck brown, in the manufacture of which aniline does not enter, and give me the common qualities and characteristics of aniline dyes, leaving out of account such qualities as are peculiar to one and not existing in another.

PLAINTIFFS' COUNSEL: That calls for an expression of opinion on a portion at least of every question in issue. I do not object to the witness stating any properties of any particular dyes,
74 whether those properties are found in other dyes, or stating what can be done with any particular dye, or with all the dyes; but for him to state as a conclusion of his own mind, without giving the jury the facts on which he bases the particulars in which two things resemble each other, is for the witness to testify to the very elementary fact that we are here to discover.

The COURT: I understand the question to be as to the characteristics of what Dr. Chandler has named as being aniline dyes. I understand he can state as matter of fact what the peculiarities of these aniline dyes are, including Bismarck brown.

PLAINTIFFS' COUNSEL: To that I should not object. That I should consider a perfectly proper question; but I do object to the question as it stands now, on the ground that it calls for the opinion of the witness as to points of resemblance between different dyes, and does not call for facts in respect to those dyes from which resemblance or dissimilarity may be inferred.

The COURT: I understand that Dr. Chandler can state as a fact what are the common characteristics and qualities.

PLAINTIFFS' COUNSEL: The question as the Court suggests it would be entirely competent and proper; but the question as it stands I do not think is competent, and I object to it.

The COURT: If there is one characteristic that is common,
75 or more than one common characteristic, he may state it.

PLAINTIFFS' COUNSEL: If the court will so instruct the witness I don't object.

The COURT: The witness understands what we have said.

Answer. The characteristic property of all aniline colors, as I understand them, is the existence in them of amido-benzol. They are all derivatives of a compound which we call triphenyl-methane. The only exception to that classification—the later classification defining them as amido derivatives of triphenyl-methane—would be in the case of the Bismarck brown. The Bismarck brown can hardly be regarded as the derivative of triphenyl-methane, but the Bismarck brown does contain the group amido-benzol. In fact, the Bismarck brown contains the group amido-benzol, which is the characteristic group in aniline colors; but the Bismarck brown is not a derivative of triphenyl-methane. That is the best distinction I can make.

Q. Are there any common qualities?

A. Simply as dye-stuffs.

Q. Well, as dye-stuffs. I suppose that is what they are traded in as.

A. The aniline colors are bases, and they form salts with acids, and they dye in a neutral bath generally, or one that is not very acid. That is one peculiarity of them.

Q. Did they all have this peculiarity in common—a peculiar brilliancy or intensity of color—as distinct from other dyes?

76 A. Well, they are concentrated colors; that is the reason they are intense.

Q. Did they have that in common?

A. In common as to intensity of color, and perhaps a great deal more than other ordinary dye-stuffs; a dye-wood might not contain more than one per cent. of color and ninety-nine per cent. of sawdust, and of course there would not be much intensity of color; but the aniline colors were about the first instances in which we had the pure dye-stuff free from vegetable matter, sawdust, and roots, and so forth, and therefore the dyers were surprised on account of the intensity of their coloring power.

Q. And they did have that quality?

A. They did.

Q. And the plaintiffs' materials here had that quality?

A. Yes, sir; it may be with a difference in degree.

Q. But they have it?

A. Yes.

Q. And did they have this quality—that they did possess a great dyeing power, so that a little dye would go a great way in dyeing?

A. Certainly, because they were not mixed with the sawdust; they were pure dye-stuffs, in contradistinction to roots, barks, and fruits and so on.

Q. And they had that quality?

A. They had.

Q. And the plaintiffs' imports had it?

A. Yes.

Q. And they were easy to dye with?

A. Yes; easy to dye with.

Q. And the plaintiffs' importations have the same quality?

A. Yes.

Q. Can you mention any other common qualities like that
77 which they had?

A. No; I don't think of any.

Q. They differed in shade and in color; they differed in name; they differed, in that some of them, or most of them, we will say, were derived from aniline and toluidine, but at least one of them not being derived from either of those, but they had these three qualities in common. Now, can you mention any other except the chemical classification which is based upon a theory, isn't it, about this amido-benzole? Can you mention any other actual physical qualities which they had in common, and which the plaintiffs' importations do not also have?

PLAINTIFFS' COUNSEL: One thing at a time.

WITNESS: Most of the aniline colors have a metallic lustre which most of the plaintiffs' colors have not.

Q. Well, I asked you common qualities?

A. That is common to most of them.

By plaintiffs' counsel:

Q. Common to most of the anilines?

A. Common to most of the anilines, a metallic lustre.

By defendant's counsel:

Q. It is not so as to all of them, is it?
A. No; Bismarck brown is not, as I have seen it.
Q. Any others?
A. The reds and the blues and the violets, they have it.
Q. Are there any other that do not; does the yellow have it?
A. No; the yellow hasn't it.
Q. The green?
78 A. The green I don't think has, as it ordinarily appears; it might if it were crystallized.
Q. There are no other qualities, then, which the aniline dyes known before the act had in common, except this fact that they came from amido-benzole and then these qualities which have been enumerated?
A. Contain amido-benzole.
Q. That they are intense, that they have high dyeing power, and that they are easy to dye with?
A. Those are peculiarities not characteristics of the anilines.
Q. But they all have them?
A. They all have them, but it is not characteristic of them.
Q. Will you please tell us about what dyes were not chemically known, but commercially known and dealt in before the introduction of aniline dyes?
A. Most of the dyes commercially known before the introduction of aniline were either derived from animals or plants. We had the old Tyrian purple derived from a mollusk; the cochineal derived from a bug; the lac derived from another bug; those are animal dyes. Then there was a chemical animal dye made from wine or made from guano, known as murexide, but this was driven out of the market by the aniline dyes. Then we had various vegetable dyes. We have a variety of roots—madder root, for instance, contains alizarine in very small quantities, and was used for dyeing calicoes; now the alizarine is manufactured artificially and sold in a pure state. The alkanet root was sometimes used, and barberry and tumeric root—they were the three imported roots—but chiefly madder. Then there was a variety
79 of woods—logwood and Brazil wood and the bar-wood and the cam-wood, they all dye different shades of red; then the yellow woods—fustic, old and young, representing two different plants. Then there was a bark—quercitron bark—that dyes yellow, and if it is treated in sulphuric acid it furnishes flavine. Then from flowers, for instance, saffron and safflower, one of them yellow and the other red. Then dyes derived from berries—the Persian berry, used in dyeing calico orange. Then a variety of other things were used, containing tannin roots, barks, and leaves, and some galls produced by the sting of insects, and some produced from the buds and seeds. Those were before the chemical dyes were introduced. An important class was obtained from the whole plant, such as indigo. Indigo was obtained from the entire indigo plant. The yellow dye was derived from a variety of mignonette, and the peculiar dyes that are obtained from certain lichens—these plants that grow on stones

and on logs, and grow on trees as moss along the sea shore—they produce a peculiar class of dye, of which the cudbar and the archil are the best representatives. Those are the dyes that were used before the introduction of chemical dyes.

Defendant's counsel:

Q. All spoken of as natural dyes?

A. Natural dyes.

Q. In all those the dyeing matter exists ready made?

A. It exists ready made or is produced in curing; alizarine is developed in curing madder.

Q. While the new dyes—the chemical dyes, as they are spoken of chiefly—largely are made synthetically from hydrocar-
80 bons as found in coal-tar?

A. Yes; but the chemical ones are the same as some found in plants—that is, sooner or later the chemist will make all, but thus far he has only made some. Indigo is made artificially, but it is cheaper to get it from indigo. Alizarine is made artificially, and it is cheaper than to raise madder plants; so that there is no difference between the chemical and natural dyes, really; all are chemical dyes.

Defendant's counsel:

Q. It is a question of economical production?

A. Yes, sir; it is a question of which is the cheaper way of making them, whether to make them in the laboratory or to let nature make them; but, of course, the dyes made in the laboratory are not mixed with the cellular tissue and the gum and starch of which the plants are chiefly composed, and it is that which makes chemical dyes so much stronger and more intense. It is their purity.

Q. Give us the relations of the dyeing power of some of these chemical dyes to the natural dyes.

A. I could hardly do that. I know how much it takes of some of these chemical dyes to dye, but I don't know, as matter of fact, how much of the vegetable dyes it takes.

Q. Take cochineal, for instance; how does that compare in drying [dyeing] power with some of these reds?

A. Cochineal contains a pretty strong dye; it contains a larger percentage of dye-stuffs than any other natural dye. As a general thing, these chemical dyes will dye a very good color with from a half to one per cent. of the weight of the wool—that is, a pound
81 of any one of these dyes in controversy would dye a hundred pounds of wool; with some less and with some more. The anilines, I think, are a little more intense than the azo colors—that is, one-half per cent. of the aniline colors would make as deep a shade of dye as a per cent. of the azo color; but I don't remember exactly. I don't know how many pounds of cochineal it would take. The degree of tinctorial power depends chiefly on the dye used, but there is a little difference in them. There are no two exactly alike in tinctorial power. The coal-tar dyes are distinguished from the

natural dyes by being as they are made, and as the natural dyes are produced in nature is of much higher tinctorial power than the natural dye, pound per pound; a pound of chemical dye will go a great deal farther than any root or stem or flower or bug. Suppose the dyeing power were concentrated from the bug itself, then you get the pure color and would have the same intensity. Carminic acid is the dyeing stuff contained in the bug itself.

Defendant's counsel:

Q. Can you think of any other common qualities which would be apparent to the merchant or dealer in the dyes or to a dyer who dyes goods—to anybody other than a chemist?

PLAINTIFFS' COUNSEL: I don't object on the ground that this witness may not know as well as any other witness may know, but that, in the nature of things, this witness or any other witness cannot know what a third person would observe.

(Objection overruled. Counsel for plaintiffs excepted, and the exception was duly allowed.)

82 A. I don't know of any other common quality—common to all anilines and not exhibited by other dyes—than those that have been mentioned. There are no artificial dyes, as distinguished from natural dyes, which, pound for pound, would dye more than the natural dyes, if the natural dyes are pure. The natural dyes have been dealt in in the trade in a greater or less degree of purity. For instance, madder root; they have a product of madder root treated with sulphuric acid which is much freer from impurity. They have another made by extracting the coloring matter from the madder root and selling it in the form of extract. Then they used to dry that extract and treat it with kerosene oil and make an almost chemically pure alizarine. So with quercitron; they used to treat it with sulphuric acid and then wash it and sell the concentrated product as flavine. So it is common in the trade to sell the natural dye-stuffs, either as naturally produced or in various degrees of concentration. From the logwood they extract a coloring matter and boil it down and sell it as logwood extract without the sawdust. The same with the fustic and other dye-stuffs—that is, the manufacturer concentrates, as far as the trade will warrant, the natural dye-stuff and sells it in the various stages of purity. It rarely pays to make them pure, because it costs too much and it is not necessary. They are not made chemically pure, but in various stages of approximation to chemical purity. The aniline dyes are pretty pure; still they are not absolutely pure in every case. The artificial dyes are comparatively pure compared with vege-
83 table dyes. They have that in common as distinguished from natural dyes usually and generally and commercially dealt in, with a few exceptions.

Q. Taking your enumeration of the aniline dyes as existing prior to 1870, now let me hear what you understand to be their common qualities, perceptible by a man of business and trade and not a chemist.

A. First with the aniline dyes, then the phenyl dyes, the phtalic acid dyes, the azo dyes, and the anthrocine dyes—five classes. The aniline class includes those which are derived from amido-triphenol methane.

Q. But I asked you the common qualities apparent to a tradesman.

A. A tradesman cannot get at that.

PLAINTIFFS' COUNSEL: I object to that on the same grounds as before, and also on the ground that the question has already been answered.

Q. Supposing that a dyer or a tradesman who had dealt in many of the aniline dyes should have a new dye brought to him, what would be his test for finding out whether or not that was an aniline dye?

PLAINTIFFS' COUNSEL: I object to that question.

The COURT: Do you insist upon that question?

DEFENDANT'S COUNSEL: That indicates what I am after. I supposed there were some common qualities which yoked together various dyes existing prior to this act.

(The question as put is read to the witness.)

The COURT: Do you mean his enumeration of all sorts of dyes existed prior to 1870?

84 DEFENDANT'S COUNSEL: His enumeration of aniline dyes.

(The objection was overruled. Counsel for plaintiffs excepted, and the exception was duly allowed.)

A. They have no common qualities that a tradesman or a business man could use as a basis for identification; it would require a chemist to tell.

Q. Couldn't he tell by the brilliancy of the dye when he had used it?

A. No; because it might be a vegetable dye.

Q. I don't ask by possibility; but wouldn't he hit it right as the trade went?

A. He could guess at it.

Q. Is not there a test which he could apply to it—although not a chemically certain test—which would be a sufficient one?

PLAINTIFFS' COUNSEL: I object to that class of questions; I object to this question.

(Objection overruled. Counsel for plaintiffs excepted, and the exception was duly allowed.)

A. He would not; for there is a pure scarlet which was run in here at one time as an aniline red. Some parties claimed it was an aniline dye, and it was proved afterwards to be rosalic acid, and it was admitted free. The dyer or tradesman could not tell whether it was an aniline color or not.

Q. Couldn't they practically and generally tell?

85 A. If the dyer is familiar with a dozen colors and is in the habit of using them he can tell them apart. If he is familiar with aniline red and aniline green and aniline violet and soluble blue and aniline blue he could tell them; if you gave him those particular dyes he could pick them out and identify them; but he could not pick out what is sold in some other place, where he is not in the habit of dealing, and tell that they were the same dyes. For instance, the dyer or user of dyes cannot tell when he dyes a yellow whether that is an aniline yellow or a phenol yellow or an azo yellow unless he has learned the chemical properties of those particular dyes.

Defendant's counsel:

Q. Why couldn't he tell?

A. Because they all look alike, and unless he makes some test which is really a chemical test and applies more or less chemical knowledge, which he may have learned as a dyer, he could not tell.

Q. Couldn't he tell when he came to use them?

A. If he detected certain chemical properties when he came to use them he would.

Q. When he came to use a color which he bought could he tell in his practice whether what he bought was an aniline or phenol color?

A. If he had bought three or four classes, two of which were aniline and two of which were not, he could tell which of these four he was operating with, but give him a fifth and he could not tell for his life whether it was an aniline or phenol color.

Q. Could he tell whether the color he got was a chemical, an artificial color, or a natural color?

A. No; he could not.

86 PLAINTIFFS' COUNSEL: I desire an exception, if your honor please, to each of the questions of this class. They all come under my objection.

DEFENDANT'S COUNSEL: You ought not to wait until the questions are answered.

PLAINTIFFS' COUNSEL: I desire to except now.

Defendant's counsel:

Q. Martius yellow and Manchester yellow—I will now ask you whether that was not known in trade prior to 1870 as an aniline color?

PLAINTIFFS' COUNSEL: I object to that as immaterial—how the trade knew it.

This objection was argued at length by counsel on both sides.

The COURT: In construing the laws of Congress, in order to know what is meant, we observe that when they passed the act of 1864 they used the term "aniline dyes," and it remained as it was down to 1870. Then they added these other words. In order to find out what Congress meant when they passed the act of 1870 or 1874 we

must ascertain, it seems to me, what were known as aniline dyes at that time, and not what were so known in the chemist's laboratory alone, but in commerce—that is, generally what the term would mean when it was used in a law which Congress applied to the subject. Congress was not fostering education; they were merely providing for a source of revenue, and to provide for that they said aniline dyes shall bear a duty of so much. In 1864 they applied those words to something; I am not familiar enough with the terms, either in commerce or chemistry, to
87 know what it applied to; I presume the jury are not; therefore we must receive evidence as to the meaning of that term generally, to know what it meant in commerce, among merchants and commercial men, to whom Congress addressed the enactment. And then, when Congress added, in 1874, "Aniline dyes by whatever name known," they meant those same things, and they applied the term "aniline dyes" to those dyes, whatever names they have got—the names they had acquired by reputation among people. So everything gets a name by what people generally call it. So we must find what people generally, in trade and commerce, as well as in chemistry, called these things up to 1870 and 1874.

If there was no other section except the section referring strictly to aniline dyes, the fact that these were discovered afterwards might require a different consideration; but there is another section, which imposes duties on articles bearing a similitude in certain respects with what were aniline dyes within the meaning of the act of Congress. We must ascertain what Congress meant. Congress is presumed when it passes a law to know everything in the country on the subject to which they applied a law. They are presumed to have known all about this matter of aniline dyes, and what the words aniline dyes had come to mean; so, in order to ascertain what the word means in the law, we must ascertain how people used it, in order to understand how it was applied by Congress. So, I think, we cannot exclude this evidence.

I am not indicating now exactly the use we shall make of
88 it when we are all through with it, but we must open this subject. We cannot say that we will stop with what chemistry says of it, or what chemists say about it; we must go along and see what generally, among those to whom Congress meant by the act to apply the words, they were understood to mean, and thus arrive at the general signification of the word. This is a question of fact for the jury, and I think it would be erroneous and that it would be wrong to shut the door when we have got the scientific definition and use, and not open it to the commercial meaning. Therefore, we will admit this class of proof.

(Plaintiffs' counsel excepted to the ruling of the court; which exception was duly allowed.)

CARL PICKHARDT, being recalled, was further cross-examined.

By defendant's counsel:

Q. What is your relation to the aniline and soda factory of Stuttgart?

A. I don't know as I stand in any direct relation to them at all.

Q. They are exporters of these colors which are in question, are they not?

A. Yes, sir.

Q. This firm by which you are employed—Pickhardt & Kuttroff—are the American house, are they not, the branch establishment of this German house?

PLAINTIFFS' COUNSEL: I object to that.

Q. What is the relation between the two?

PLAINTIFFS' COUNSEL: If he knows.

DEFENDANT'S COUNSEL: He will not tell me if he does not know.

89 PLAINTIFFS' COUNSEL: I object to the question, anyway, as immaterial.

Q. Do you know what the relation between the two concerns is?

A. I know that Pickhardt & Kuttroff import aniline colors and azo colors and various colors ftom the Stuttgart Badische Anilin and Soda Fabrik as they import other stuffs from other firms on the other side.

Q. Don't you know any other or further relation than that between them?

A. I believe that the Badische Anilin and Soda Fabrik are interested in the firm of Pickhardt & Kuttroff.

Q. And your business with Pickhardt & Kuttroff involves the testing of aniline dyes, do you say?

A. Yes, sir; or having them tested under my supervision. I can't do it all myself.

Q. What else does your business with them involve?

A. The selling of dye-stuffs.

Q. When you say that your business with Pickhardt & Kuttroff is to test aniline colors, or to have them tested under your supervision, you mean, do you not, that it is to test all of the artificial dyes which they introduce?

A. Yes, sir.

Q. That is the way you use the term "aniline colors," is it?

A. I beg your pardon. When I said before "aniline colors" I added azo colors and other dye-stuffs.

Q. When you said in your answer to my question as to what your business was with Pickhardt & Kuttroff that it was to do the work of testing aniline colors you meant all the artificial chemicals, did you not?

90 A. No, sir; I could not include artificial alizarine, for instance, aniline colors, and a great many others.

Q. You used that expression without thinking what the effect might be, did you not?

(Not answered.)

Q. You said something on your direct examination about holding a power of attorney; what was that?

A. That I signed the name of Pickhardt & Kuttroff by power of attorney.

Q. Is that your signature?

A. It is, sir.

Q. (Handing witness a letter.) Did you send that letter?

A. I did.

Q. Acting in your capacity as the agent under your power of attorney for Pickhardt & Kuttroff?

A. Yes, sir.

(The letter thus referred to is marked for identification "Ident., J. H. F. (1).")

Q. Will you look at this case that I have here and say whether or not this is the case referred to in that letter?

A. It seems to be the case; yes, sir.

Q. And these are the bottles which it contained?

A. They seem to be the same.

Q. This case with these bottles were sent by you to the persons to whom this letter is addressed, as stated in the letter?

A. Yes, sir.

DEFENDANT'S COUNSEL: I will offer the letter and the case in evidence.

PLAINTIFFS' COUNSEL: At the proper time I shall not object to this letter and the conteuts of the case.

DEFENDANT'S COUNSEL: I merely offered it to be fair, because I thought my friend might want to examine.

Redirect by plaintiff's counsel:

91 Q. Do the tags on these show when they were dyed?

A. Some of them will; some of them will not.

Q. As a matter of fact, have they all been dyed within the last few days?

A. Yes, sir; I believe so.

Recross by defendant's counsel:

Q. You are familiar with the price-lists published in Stuttgart by the Badische Anilin and Soda Fabrik?

A. I have seen some of them; yes, sir.

Q. Is that one of them?

A. That looks like one; yes, sir.

Q. You have no doubt about that being one, have you?

A. No; I have no doubt of it; no, sir.

(The price-list referred to is marked for identification "Ident., J. H. F. (2).")

Q. Is this one of the price-lists of Messrs. Pickhardt & Kuttroff, who are the plaintiffs here?

A. Yes, sir; that is an old price-list of theirs.

Q. A price-list of May, 1879?

A. May, 1879; yes, sir.

(The price-list referred to is marked for identification "Ident., J. H. F. (3).")

Q. Is this Pickhardt & Kuttroff's price-list for January, 1881?
A. Yes, sir.

(The price-list referred to is marked for identification "Ident., J. H. F. (4).")

92 Dr. CHARLES F. CHANDLER, being recalled, was further cross-examined.

By defendant's counsel:

Q. The question was as to Martius yellow and Manchester yellow. I will now ask you whether that was not known in trade prior to 1870 as an aniline color?

PLAINTIFFS' COUNSEL: To that question we object generally, on the grounds heretofore stated. Your honor admits it, I suppose, and we will take an exception. We further object on the ground that it is not limited to trade and commerce in this country.

(Objection overruled. Counsel for plaintiffs excepted, and the exception was duly allowed.)

DEFENDANT'S COUNSEL: I will limit that question to trade in this country, and I doubt if it was known in this country as early as 1870.

Q. It was not, to your knowledge; you don't know about it?
A. Not to my knowledge. It was brought out in Germany. I don't know the color naphthaline brown by that name; I don't remember any brown. Naphthylamine roth is also called roccelline; it is called "fast red;" it is called "echtroth;" that is "pure red," literally translated. There are several other names for it. It has been called rubidine; it has been called "rauraciemene;" it has been called "orseilline" number 3.
Q. I think you said that another of the names for resorcine, which is another of these colors, was eosine.
A. Yes.
Q. (Handing witness a sample.) Is that the article?
A. It looks like it, and it is so labeled.
93 Q. What is the label?
A. Eosine.

(The sample just referred to is marked for identification "Ident., J. H. F. (5).")

Q. (Handing the witness a sample.) Is that another eosine?
A. Yes; that is another eosine.
Q. And resorcine, too?
A. A resorcine red.

(The sample just referred to was marked for identification "Ident., J. H. F. (6).")

Q. (Handing the witness a sample.) Is that the naphthylamine color?

A. I think it is; it looks like it; that is labeled "fast red."

Q. RRR?

A. RRR.

Q. Those R's indicate merely different shades of the article?

A. Yes.

(The sample referred to is marked for identification "Ident., J. H. F. (7).")

Q. (Handing the witness a sample.) Is that orange II and IV?

A. Orange B.

Q. These things are called A and B; do you know what that means?

A. I don't know what that means. Orange A is orange No. 2, I suppose.

Q. The same as plaintiffs' sample of No. 2?

A. Yes.

Q. And what is that other sample?

A. Orange B. It looks like one of those oranges, but whether it is number 4, I should not like to say. I don't remember that orange No. 4 has been called orange B. I will look and see whether orange No. 4 is called orange B. I don't know whether orange B is orange No. 4 or not; it looks like it.

(The samples referred to are marked for identification "Ident., J. H. F. (8 & 9).")

94 Q. Can you tell whether that is what you call an azo color?

A. I should have to test it to make sure.

Q. With what sort of a test?

A. Some sort of a chemical test, to take it to pieces and find out what it was made of.

Q. To analyze it?

A. To analyze it.

Q. (Handing the witness a sample.) Is that another one?

A. This is another naphthylamine red.

(The sample referred to is marked for indentification "Ident., J. H. F. (10).")

Q. As it stands among these that I have shown you taken out of this case—*i. e.*, the case referred to in the letter marked Defendant's Exhibit F—you find all of the importations in this case that you are sure of except orange 4, and as to that you are doubtful?

A. Let me look at that again. (The witness examines sample.)

Q. That (orange 4) you are doubtful about?

A. I don't think there is much doubt about it.

Q. You think it is orange 4?

A. I think it is the same.

Q. So that in this case we find samples of all the plaintiffs' importations involved in this suit?

A. It seems so.
Q. Do you know the color methylene blue?
A. I do.
Q. Is that an azo color?
A. I should call that an aniline color.
Q. How is it made?
A. It is made by treating nitrose-dimethyl-aniline with nitrous acid, making a dimethyl-aniline; then treating that with ferric chloride, and then with sulphuretted hydrogen, if I remember rightly; I have made it.

95 Q. Where does the aniline come in?
A. From the dimethy-laniline.
Q. You take aniline and make dimethyl-aniline from it?
A. Yes, sir.
Q. (Handing the witness a sample.) There is another shade of naphthylamine red?
A. Yes, sir.

(The sample just referred to is marked for identification "Ident., J. E. H. (11).")

Q. (Handing the witness a sample.) There is another resorcine color?
A. Yes, sir; that is an eosine.

(The sample just referred to is marked for identification "Ident., J. H. F. (12).")

Q. (Handing the witness a sample.) Here is something marked scarlet. Do you know what that is?
A. No; I do not know what that is; it may be a mixture of some other color; they are sometimes mixed together—two or more of the other colors—to produce an intermediate shade.
Q. You don't know what, for instance, Pickhardt & Kuttroff call "scarlet for cotton?"
A. No, sir; I don't know; some mixture of their own, probably.
Q. That is a combination of the other colors?
A. Yes, sir.
Q. Was it true of the anilines known prior to 1870 that by combining them you couldn't get aniline scarlets?
A. Not to my knowledge.
Q. You don't know what "scarlet W. R." is there?
A. No; I don't know.
Q. What they mean by scarlet?
A. What they mean by scarlet W. R.

96 Q. Do you know the color anisol red?
A. Yes, sir.
Q. What is that?
A. That is one of the new azo colors.
Q. That is, aniline is not used in its manufacture at all?
A. No, sir.

(The sample which is referred to is marked for identification "Ident., J. H. F. (13).")

Q. (Handing the witness a sample.) What is that?
A. That is another one of the same kind.
Q. Aniline does not enter into the manufacture of that?
A. Aniline does not enter into the manufacture of it.
Q. It is derived how?
A. It is made from anisol and naphthaline.
Q. What is anisol made from?
A. Anisol would be derived from carbolic acid.
Q. From a phenol?
A. From a phenol; it is a derivative from carbolic acid.

(The sample just referred to is marked for identification "Ident., J. H. F. (14).")

Q. In neither of those anisol colors did aniline enter into the manufacture?
A. No, sir.
Q. They are what you call the azo colors?
A. Yes, sir; azo colors.
Q. (Handing the witness a sample.) Is that what you call Manchester yellow?
A. It looks like it, but I can't be positive by looking at it.

(The sample just referred to is marked for identification "Ident., J. H. F. (15).")

Q. (Showing the witness a sample.) You should judge as far as you could tell by appearance?
A. It looks like it.
97 Q. As far as you can tell by appearance, it is?
A. Yes.
Q. Can you tell by the looks whether aniline enters into the composition of any one?
A. No, sir.
Q. These colors are so near alike that you can't tell by anything but a chemical test?
A. It is not that they are so near alike, but they present themselves in every possible form; they may be of every shade of color and degree of intensity of color.
Q. (Handing the witness a sample.) What is that?
A. This is labelled "fast yellow," but I can't tell by the appearance of it what it is.
Q. That is the same trouble you were in about the scarlets?
A. Yes.

(The sample referred to is marked for identification "Ident., J. H. F. (16).")

Q. Can you tell by looking at the backs of those bottles what they are without looking at the labels?
A. Oh, I might guess; they look a little like some of the aniline blues; I have not a very good chance at a distance of three feet.
A. Just take one, without looking at the label, and look at it on any side except the labelled side.

A. (The witness having done as requested.) No; I should not want to say; it may be an aniline blue.

Q. Look at the label now.

A. It is labelled "scarlet."

(The sample referred to is marked for identification "Ident., J. H. F. (17).")

Q. (Handing the witness samples.) Do you know what they are from the labels?

A. No; I do not know what they are.

Q. They are like the other scarlets?

A. Yes, sir.

98 (The samples referred to are marked for identification "Ident., J. H. F. (18 and 19).")

Q. (Handing the witness a sample.) Without looking at the label, can you tell what that is?

A. It looks like a mixture of two colors; it might be a mixture of fast red and one of the oranges.

Q. That is, two azo colors, the fast red and one of the oranges?

A. Yes; they might be mixed together and make such a mixture as that.

Q. Look at the label and see what it is.

A. It is phosphine.

Q. Phosphine is a true aniline?

A. As far as it is known; we do not know exactly what it is.

Q. That is, aniline enters into it?

A. It is a residuum from aniline; it may have impurities though derived from aniline; it is crysaniline; it is not known exactly what it is.

Q. Taking the aniline that is used in trade, you know that?

A. Yes; taking the crude aniline, the residues after the aniline red has been prepared yield this, but exactly what this comes from is not so certain.

Q. And it is true, as I understand you, that true aniline that is derived from aniline in that way so closely resembles the mixture of the azo colors, naphthylamine and orange, that you could not tell them apart here?

A. As I said at the outset, I do not pretend to judge of a color from the outside of a bottle; I only guess at it to accommodate counsel in the case. I had no idea of arriving at its true character by looking at it, but only to make a guess.

99 Q. That is about the way a tradesman would have to do it?

A. If a tradesman bought his goods by such a test as that he would go into bankruptcy in the course of a few months, if he limited his examination to that.

Q. That is the fact, isn't it?

A. The fact that they look at them that way to find out what they are?

Q. The fact that you couldn't tell from a mixture of naphthylamine red and orange?

A. No; not without testing it.
Q. Without analyzing it?
A. Not without making some test or other.

(The sample just referred to is marked for identificatian "Ident. J. H. F. (19½).")

Q. (Handing the witness two samples.) This is the Bismarck brown about which there has been so much talk?

A. Yes, sir; those are labelled Bismarck brown, but you can't tell whether they are, for there has been a large amount of material sold as Bismarck brown which was simply the crude residuums after making aniline red, boiled down. There is a Bismarck brown, a definite substance. Then there is a great deal of common refuse matter from making the aniline, which dyes a dirty brown, which is sold in the market as Bismarck brown; so I can't tell by looking at the label whether this is really Bismarck brown. The real Bismarck brown is not an aniline color.

(The samples just referred to are marked for identification "Ident., J. H. F. (20 and 21).")

Q. Didn't you testify to that yesterday?
A. No.

Q. Didn't you, in testifying on direct examination, in an-
100 swer to Mr. Clarke's question for a list of anilines known prior to 1870, give that?

A. I said Bismarck brown was called an aniline prior to 1870, but it is not an aniline as it is known now. It is known now to be an azo color, but in 1870 it was called an aniline color, and passed for an aniline color. It is really an azo color.

Q. You say "really;" that is so according to the chemical theory as it is now understood?

A. Not according to chemical theory, but according to the chemical fact. It is a question of fact in chemistry whether a thing is an azo or aniline compound.

Q. I suppose it all depends on certain differences or axioms which you take for granted at the start?

A. No, sir; not at all.

Q. It does not?

A. We examine a large number of chemical compounds, and we find that a certain number of them are built up on a group of two atoms of nitrogen, and as soon as we find out their real constitutions we have learned how to make them and can make them by the dozen. There is no limit. As soon as the real character of azo colors was discovered, then chemists knew how to make them. These two or three discoveries before that had been confounded with the aniline colors were the result of accident, and they were simply so confounded because it was not found out what they were. As soon as their real nature was discovered it created a new class of chemical compounds, founded on a definite structure; and as soon as this structure was discovered methods of producing them at will and

without number almost immediately occurred to the chemists, and twenty, thirty, or forty of them are patented every year now.

101 Q. You state that the azo colors, which you say were found by accident, were confounded with the aniline. It was known that aniline was not used in their manufacture?

A. No; the first ones were made from the residues. You see, the aniline that is used in making aniline colors is not pure aniline, but it is a mixture of aniline, toluidine, and some xylodine, and some impurities that they can't get out, besides those. They treat it by a process which creates the aniline red, and they separate that as far as practicable. Then they have a quantity of liquid left which contains some of the aniline red and all the impurities. They find out that by treating it one way or another they can make this color or that out of it—a brown or a yellow—and they put those on the market, and, not knowing what they are, they put them in along with the aniline colors. By and by the subject receives more investigation, because it was new when these things were discovered, and as investigation progresses it is found that these things, although they are produced from the crude aniline, are not made from aniline itself. For instance, Bismarck brown does not come from real aniline at all; it comes from toluidine, and they are called aniline colors at the outset, and included among them from ignorance.

Q. Ignorance of chemical distinction?

A. No; it was a new subject.

Q. Well, then, the name must be a matter of convention and agreement. You agree to that?

A. Not at all; every dealer has his own name.

Q. It is perfectly arbitrary, one way or the other?

102 A. The names are perfectly arbitrary until they are fixed by chemical principle. Now, azo dye is not an arbitrary name; the azo dye tells what the thing is, and if it is properly applied any chemist can tell you that the azo dye which he never heard of before must have such and such a structure; otherwise it would not be an azo dye.

Q. Because he is acquainted with the convention which gives a certain signification?

A. Because he knows certain principles; he knows what the azo compound is.

Q. He is acquainted with that general agreement which gives a certain significance to that word?

A. Just as he would know what sugar is, or an alkali, or an acid.

Q. Now, wasn't it known as Bismarck brown, and wasn't Bismarck brown made prior to 1870 without the intervention of aniline in any state of its manufacture?

A. Well, I can't say. They began it by making this from aniline residues.

—. Can't you look at your books and find out?

A. (Continuing.) And afterwards they investigated it and found out what it was made from, and then they could proceed to make it without aniline residues.

Q. And wasn't all this discovered?

A. It may have been discovered, but they keep those things all as trade secrets for some time, though they gradually leak out to the chemists before they get out to the trade. It was introduced in Germany in 1866, and the process for making it from the toluidine was brought out in 1867.

Q. Was this known at that time?

A. Yes, it was known.

Q. Well, you say it was confounded with an aniline dye. Now, why?

A. Because it was first prepared from aniline, I suppose,
103 and the azo color hadn't yet been investigated sufficiently to have chemists discover that there was a separate and distinct class.

Q. How early was a color now known as azo-benzole yellow known?

A. An account of that was published in 1866 in a German chemical journal.

Q. It got into this country between that and 1870, didn't it?

A. Yes, sir. No; the chemist——

Q. (Interrupting.) And was known as an aniline?

A. Yes.

Q. Among the chemists?

A. The knowledge got among the chemists, and the dye got in among the dyers.

Q. And was known as an aniline dye?

A. And was known as an aniline dye.

Q. How was azo-benzole made?

A. They boil diazoamido-benzole with aniline hydrochlorate and afterwards convert that into a salt, an oxylate.

Q. That is, aniline enters into its manufacture?

A. Yes.

Q. But suppose the aniline structure was destroyed?

A. The aniline structure is destroyed.

Q. It don't have the amidogen?

A. There is a molecule of the amidogen in the yellow.

Q. Nevertheless, the aniline was destroyed, as you say it was, in the two oranges of the plaintiffs' importation, was it?

A. Well, there ceases to be any aniline; they are combined. There ceases to be any aniline in the compound.

Q. If you saw azo-benzole yellow now would you say it was an aniline dye?

A. No; it is an azo dye.

Q. That is a distinction between your judgment now and common usage before 1870? It was known then as an aniline dye?

A. The class of azo dyes had not been clearly established at that time.

104 Q. Chemically?

A. Chemists began to talk about azo dyes and azo compounds, and articles were written in scientific journals among chemists, and they were coming to the conclusion that it would be necessary to establish a distinct class; that these bodies were radically

different from what had formerly been known as aniline dyes and what were properly aniline dyes.

Q. When you say "properly aniline dyes" I don't know what your standard of propriety is.

A. Chemical propriety.

Q. And from your chemical agreements that the term aniline dye should be applied to dyes having amidogen in them?

A. That is, similar to the original dyes which receive the name aniline. The regular aniline dye was rosaniline, and from that, by substitutions and modifications, were derived various aniline violets and aniline blues and aniline greens. Those substances all exhibit the same general constitution. Chemically, they are all amido derivatives of triphenal-methane, and consequently they all belong together, chemically, by their constitution, by their mode of preparation, by their origin; they belong together. Now, the azo dyes are totally different. It would be like confounding together in one group acids and alkalies. To be sure, manganese gives us an acid and gives us a base, but manganic acid belongs among the acids.

Q. Can you mention any other azo dyes, now regarded as such, which were by common usage called aniline dyes prior to 1870, besides Bismarck brown and amido-benzole yellow?

A. No, sir; I don't know of any others.

Q. None occur to you? Can you find that out?

105 A. That would be difficult. There are about a dozen pages devoted to the subject.

Q. If you can't find it readily I won't ask you to do it now.

A. No; I don't think of any others.

Q. In making amido-benzole yellow you can make it without aniline, can't you?

A. I presume so; I don't for the moment think how to do it. Those results can be reached generally by various roads.

Q. You said with regard to the orange colors, if I recollect aright, that they were practically made from aniline?

A. Yes; but they can be made without it.

Q. That, I suppose, would be true of amido-benzole yellow?

A. I think so, but I won't be positive.

Q. That is your judgment?

A. Yes.

Q. Have you that article that you wrote about ten years ago, which was referred to yesterday in court here?

A. No; I haven't it here.

Q. Where was that?

A. It was in Johnson's Encyclopædia.

Q. I would like to see how you talked about these things at that time.

A. I think you will find Bismarck brown and chrysaniline or phosphine; I think you will find them both included under the general term of aniline colors.

Q. As you understood it in 1874?

A. No; it was written, I think, in 1872 or 1873. The article must

have been written in—I have forgotten exactly—but I know the article was written before 1873.

Q. That is, it was written before the Revised Statutes were passed?

A. It may have been written in the spring of 1873 or 1872,
106 because I remember writing it in a house which I left in the summer of 1873.

By defendant's counsel:

Q. What would be the title of the article?

A. Aniline dyes.

By defendant's counsel:

Q. In that you state what?

A. I made up for the Encyclopedia a popular article on aniline colors.

Q. Illustrating the effect of the dyes, etc.?

A. I have forgotten what I put in it. I have not read it for a long time.

Q. (Showing the witness "Ident., J. H. F. (4).") In one of these price-lists of Pickhardt's, identified by the witness Carl Pickhardt, I wish you would take the column headed reds and run over and point out in their order as named there the manufacture in which aniline entered and what is new to it.

A. Aniline enters into the manufacture of all the reds called fuchsine; that is the first series, of which there are something like ten or eleven.

Q. Distinguished by different letters?

A. Distinguished by different letters; fuchsine, A, AE, SE, SN, SR, and SB, reddish and bluish.

Q. Aniline enters into the manufacture of those?

A. It does.

Q. Of garnet?

A. Of garnet. I am not sure what this firm understands by the term garnet; whether that is a regular, well-defined color.

Q. Can you tell by looking at that?

A. Yes; that is an aniline color—that is, it is one of the varieties of fuchsine.

After recess.

107 Q. Please continue with that column of red in the catalogue marked for identification J. H. F., 4.

A. The next three colors are varieties of saffranine; they are derived from a homologue of aniline—toluidine—and they are properly understood as aniline colors.

Q. What is the homologue of aniline?

A. We have in chemistry substances which are very nearly allied to each other and which differ by a common difference, just as numbers in arithmetic are arranged in series with a common difference, and aniline is the beginning of a series of bodies essentially alike in character and all other features, but they differ by a common difference of one atom of carbon and two atoms of hydrogen—

CH_2. This aniline series includes aniline, two toluidines, several xylodines, cumidines, and cymidines; those substances are all amidobenzole compounds, but they differ in each member of the series containing CH_2 more than the previous one, and we call the whole a homologous series, and each of them is a homologue of each and every one of the others. Toluidine is the second member of the aniline series; first comes aniline and then comes toluidine.

Q. The term homologue in that connection means that they belong to a series of chemical substances which differ by a common difference?

A. That is it.

Q. In that case there CH_2 indicates a molecule?

A. No; we wouldn't call that a molecule, because it never exists by itself. A thing to be a molecule must exist by itself; that exists only in combination with something else.

Q. It is an idea?

A. It is a group; we call it a group of atoms.

108 Q. That exists in idea only and not by itself?

A. Toluidine would make a molecule, and in that toluidine the CH_2 would be one of the groups. It is not really CH_2; the reason that becomes CH_2 is that CH_3 takes the place of H. CH_3 is also a group, but the reason of the common difference is that CH_3 occupies the place that H formerly occupied, and that is equivalent to CH_2.

By plaintiffs' counsel:

Q. Benzole is C_6H_6?

A. Yes. Toluole is C_7H_8, having one more carbon and two more hydrogen. Now, the way benzole becomes toluole is by having one of the hydrogens of the six of benzole replaced by CH_3—methyl; so we say that toluole is methyl benzole; it has methyl substituted for an atom of hydrogen; when we pull out one hydrogen and replace it by CH_3 that increases the molecule by CH_2. That is what we call a homologue, and the saffranine is made of toluidine, which is a homologue of aniline; it is the same kind of substance exactly; and fuchsine isn't derived from pure aniline, but by making a mixture of aniline and toluidine.

By defendant's counsel:

Q. But aniline enters into its manufacture?

A. Yes, sir.

Q. Aniline does not enter into the manufacture of saffranine?

A. No, not the pure aniline; crude aniline—commercial aniline for making reds——

Q. It is only that part of it which is the toluidine?

A. In the case of saffranine only the part which is toluidine enters into the saffranine.

Q. The homologue of aniline which enters into the composition of saffranine is toluidine only?

A. Yes, sir.

109 Q. And it is only the toluidine that goes into it?

A. Yes, sir.

Q. Nevertheless saffranine was known before 1870 and called an aniline color?

A. Yes; that is recognized—built upon the same general plan as the aniline colors—as belonging to the aniline color class.

Q. In spite of the fact that aniline did not play any part in its manufacture?

A. Yes.

Q. Am I right about this, that according to your idea to make an aniline color it is not necessary that the aniline should have the chemical substance existing with its own properties in the color, or that it should have that chemical substance, aniline, as an agent in its manufacture; neither of those two things make up your idea of aniline, do they?

A. You haven't got that quite right. Toluidine is methyl aniline; consequently when we make our saffranine out of toluidine we are making it out of aniline; but that is methyl aniline; not aniline simple, but methyl aniline, which is toluidine, which is a homologue of simple aniline.

Q. If I remember rightly the white lead instance, my impression is that when you say toluidine is aniline you don't mean that toluidine has the properties of aniline?

A. Yes.

Q. As that identical chemical article?

A. Yes; there are differences, but most of the properties are identical; it differs by $C H_2$.

Q. It differs essentially, don't it?

A. It differs by C H, and that makes it a methyl aniline instead of simple aniline.

110 Q. How do they get toluole from coal-tar, usually?

A. The light oil of coal-tar is a mixture of benzole and toluol, with a little xylol and a little cumole, and by putting the mixture in the still—the crude light oil of coal-tar—and carefully distilling, the benzole distills over first, the toluol comes over next.

Q. From the benzole you get the aniline?

A. From pure benzole you get pure aniline, but they very rarely make a pure benzole, because they very rarely want pure aniline, and for aniline red they want more toluole than benzole, because to make aniline red, or fuchsine, they must have a mixture of two molecules of toluole and one molecule of benzole, and then that mixture is converted into nitro-compounds and reduced to bases, and we have one molecule of aniline and two molecules of methyl aniline or toluidine.

Q. In making rosaniline?

A. Yes; and that is the mixture which is heated with arsenic acid to make rosaniline or aniline red. Now, as to this saffranine, it is not necessary to have any of the aniline simple, the methyl aniline is wanted.

Q. And the methyl aniline is the thing that comes from toluole, which is the next heavier oil of benzole?

A. Yes; toluole is methyl benzole, and toluidine is methyl ani-

line. In one we have a homologous series of hydrocarbons, of which benzole is the beginning.

Q. You don't mean that in toluole methyl and benzole exist in a chemical combination?

A. No.

Q. It is united as nitric acid and lead are united to make nitrate of lead, isn't it?

A. Yes, sir; combined together.

111 Q. Producing new chemical substances?

A. Yes; toluole is a distinct and separate substance from benzole.

Q. And toluole is a different and distinct substance from aniline?

A. Yes; each one is a definite and distinct individual.

Q. From toluidine comes saffranine?

A. Yes.

Q. And which was called customarily in the trade, prior to 1870, an aniline color?

PLAINTIFFS' COUNSEL: The district attorney asks if it was called an aniline. I understood the witness to say it is an aniline.

The WITNESS: Yes; it is called an aniline and is an aniline.

Q. Is napthaline a homologous substance with benzole?

A. No; naphthaline belongs to a totally different series.

Q. Is it an analogue?

A. Well, it is a hydrocarbon, just as benzole is?

Q. What does analogue mean in chemistry?

A. Analogue means analagous, which has something in common; but we don't use the term analogue as a distinct and definite term in chemistry.

Q. Then it indicates resemblance?

A. We don't use it. I may say, for instance, that colors are analogous in their origin or analogous in their shade, or analogous in their use. The word "analogous" and "analogue" has no chemical significance. It has only the ordinary significance of the English language; it is not a chemical term; at least, if it is, it is so little used that I don't recall its use.

Q. I have seen the statement somewhere with reference to aniline and naphthaline, and summing it up by saying these
112 are homologous coal-tar colors. What does that mean?

A. Homologous means having a common difference.

Q. What is the common difference between naphthaline and benzole?

A. There isn't any. You cannot have a common difference between two things. To have the difference common it must occur more than once, and therefore have a series of at least three; otherwise you could not have the same difference occur twice and become a common difference.

Q. Do benzole and naphthaline, with any other chemical substance, constitute a series having a common difference?

A. You could make a difference by taking benzole $C_6 H_6$. Naph-

thaline can be regarded as two molecules of benzole which have co alesced with the loss of two atoms of carbon and some hydrogen, and then you can have a body produced by the coalescing of three molecules of benzole. I think that would make a common difference; but that is not a common expression in chemistry, however, to put those together as making a series. Of course, you can trace out a connection between all chemical substances; but that would be rather far-fetched. I never should think of associating naphthaline — benzole together.

Q. Why don't you think of it? Is there anything in the nature of things to prevent your thinking of it?

A. They are too far apart to be associated closely.

Q. Too far apart, how?

A. Chemically.

Q. Where is the line between things that are too far apart and things that are near chemically?

A. It is a matter of degree.

Q. Who decides it?

A. It decides itself on the face of things.

Q. It is a matter of degree?

113 A. Yes. You can have charcoal—that is, carbon—and there is a certain relation between charcoal and benzole. Take one atom of carbon and one molecule of benzole, and between this carbon and this hydrogen there is a certain connection between charcoal and benzole. There is a certain connection between stove polish and benzole. Stove polish is carbon; diamond is carbon; so there is a certain connection between fire-damp and carbon.

Q. Those are things which are too far apart?

A. Yes, sir; those are too far apart.

Q. Mention some two things that are pretty near on a line.

A. Benzole and toluole are as near together as two things can be and be different, because $C H_2$ is the smallest common difference which you can have; so benzole and toluole are the closest together, and each one is a different individual. Benzole and naphthaline are a great deal farther apart.

Q. Take the hydrocarbons. Mention two of them that are near the line which separates, what is too far apart and what is near enough to be homologous.

A. I don't exactly know how. I don't think of any groups to suggest.

Q. Think of some things very close together and some things far apart. Now, can't you mention some things about which there is some doubt as to whether they belong to the one side or the other?

A. I don't think of any.

Q. Is toluole a little nearer naphthaline than benzole?

A. No; it is not any nearer naphthaline than benzole.

Q. Is cumole?

A. No; not any nearer; all on a parallel line.

Q. Mention some of the other hydrocarbons; they escape

144 me.

A. There is anthracene.

Q. Is there anything common chemically between anthracene and benzole?

A. No; I don't think of anything.

Q. Anthracene stands still farther off?

A. Anthracene is a little farther off. In one sense it is a little nearer. The naphthaline and the anthracene have one thing in common. Well, perhaps I am myself astray there—no; anthracene is a step beyond, because the anthracene contains three benzole groups, while the naphthaline only contains two.

Q. The benzole contains one?

A. The benzole contains one.

Q. There is a homologous series differing by one group of benzole nucleus?

A. They might put them together and make a homologous group out of them.

Q. Is there a common difference as to the benzole ring or nucleus?

A. I think there must be. Let us see what the carbon and hydrogen atoms are (figuring on a pad). Yes, there is a common difference.

Q. So that they are homologous?

A. Yes; they are homologous.

Q. Can you explain why you should say that saffranine, coming from toluidine, is an aniline color, and that naphthylamine red, coming from naphthaline, is not?

A. Yes. All the aniline colors are derivatives of amido-triphenyl-methane, and none of the naphthaline colors are. That is the identical difference between them.

Q. They are all derivatives of benzole—that is, they all have the benzole nucleus or ring?

A. Everything in aromatic chemistry has the benzole nu-
115 cleus in it; that don't make them much nearer together than to say they all have carbon in them.

Q. It does a little nearer?

A. It does a little bit nearer.

Q. It makes them have a common grandfather, we will say, instead of a common great-grandfather?

A. Well, it is a great deal farther than that—a great many more generations than great-grandfather. Organic chemistry is divided into two halves, fatty chemistry and aromatic chemistry, and the benzole ring occurs in every aromatic body, whether it is an acid or base or alcohol or aldehyde, or whatever it may be.

Q. Are all these things homologous; do they form a homologous series?

A. Yes; they can all be divided into homologous series.

Q. All one series?

A. No.

Q. You can make as many as you want?

A. No; not as many as you want to. Those things arrange themselves in homologous series. We don't make these things; we take them as we find, and arrange them according to their constitution and affinities, and if it isn't done properly the first time it is corrected.

Q. It depends all on the possibilities of the atoms which you infer or judge to be in them?

A. Yes.

Q. And then on the number of the atoms and the combination of those atoms?

A. Yes.

Q. The combinations which represent the number of the atoms?

A. Yes.

Q. And where you can find or arrange those figures in any way representing the atoms, so that they will stand in an arith-
116 metical progression in reference to each other, then you say you have a homologous series?

A. Not exactly so. We find that a number of substances endowed with similar properties, behaving in the same way, differ from each other by a common difference, and we see a homologous series. We don't make the series, but we study different things. One you make from one series and another from another series.

Q. And you interpret and explain it by showing the relations between them that constitute the series?

A. Yes; we find that there are certain things which, when carefully studied, are found to be very nearly related, and when we come to analyze them and determine the ratio of carbon to hydrogen they naturally fall into an homologous series.

Q. Now, will you go on with that list (the catalogue marked J. H. F. 4)?

A. I come now to the three scarlets. I don't know what those are. They are simply labeled scarlets C R, C B, and C B B; and the next are ponceaus; there are some ponceaus that are azo colors; what these ponceau colors are I cannot tell by the price-list.

Q. Can you tell by the price?

A. No; it don't indicate.

By PLAINTIFFS' COUNSEL: There are no prices on that list, are there?

A. Yes; the prices are here.

By DEFENDANT'S COUNSEL: There is no such difference in price between azo colors and what you call aniline colors as by knowing the price it will lead you to infer what the color is?

A. No. Then come the five eosines; those are resorcine colors, not aniline colors.

117 Q. They are in the same group there as the others?

A. Yes; they come under the same head.

By PLAINTIFFS' COUNSEL: They come under the head of reds?

A. They come under the head of reds. Then comes aurine; that is not an aniline color; it is a phenol color. Then come six fast reds; those are not aniline colors; they are azo colors. Then come three anisol reds; those are not aniline colors, but are azo colors. Then come five azo-benzole fast crimsons; these are not aniline colors, but are azo colors. That is the end of the column of reds.

Q. Take the oranges on the same list.

A. Orange A is an azo color; what orange B, C, and R are I don't know; that is a designation of this particular firm. Phosphine is

the aniline yellow, the exact constitution of which is uncertain, but it is commonly understood to be an aniline color. The orange light and orange dark, I don't know what they are. Chrysoidine is an azo color, and not an aniline.

Q. Take the next column—violets; these are what you call aniline colors, are they not?

A. Yes; the violets are all anilines.

Q. And the next one is what?

A. The greens; they are all anilines.

Q. The blues?

A. The blues are all anilines.

Q. The methylene blue—what is that?

A. That is an aniline.

Q. Go on with the yellows, browns, and grays.

A. I don't know what this firm understands by fast yellow; it is not the aniline yellow, as I see by the price; aniline yellow is a very expensive color—the phosphine—and this fast yellow here is
118 a very cheap color; so it is not an aniline color; but which one it is, whether it is one of the phenol yellows or an azo yellow, I cannot tell by looking at the price-list.

Q. It may be a benzole.

A. No; I don't think it is an azo-benzole color. I judge from the price, it is one of the cheapest colors on the list. The yellow crystals is not the phosphine; but which of those three colors it is, I don't know. The picric acid is a phenol color. Uranine is an azo color. The naphthol yellow is a phenol color. Among the browns—there is only the Bismarck brown—two shades—that is an azo color. Under the head of grays appear nigrosine and induline; those are aniline colors. Under the head of black no color is given, but simply materials for making a color in the fabric.

By defendant's counsel:

Q. What are the materials?

A. Aniline oil and aniline salts are mentioned under the heading. That is a material which is converted into black on the cotton fabric. Under the head extracts and carmines is the extract of sumac, the extract of logwood, extract of fustic, extract of lime, extract of sapan, extract of safflower. Those are all vegetable dyes concentrated; they are extracts of vegetable substances. Indigotine is the coloring matter of indigo in its concentrated form. Extract of indigo is a solution of indigo. Carmine of indigo is a salt of one of the sulpho- acids of indigo. Carmine of archil is a concentrated coloring matter from some one of those rock weeds. Finally comes artificial alizarine, of which there are eight different shades; those are not aniline colors.

119 By plaintiffs' counsel:

Q. Artificial alizarine is not an aniline or azo color?

A. Neither; it is an anthracene color.

By defendant's counsel:

Q. Take the vegetable colors under the head of extracts and carmines, and tell me the different colors which those things make, going right through the list.

A. They make every color of the rainbow.

Q. Then that price-list is made up in this way: It distinguishes the prismatic colors produced by the color dyer or chemist, and puts them in lists by themselves, and then under the head of vegetable dyes are grouped the vegetable colors, although producing the same colors—every color of the rainbow; they are put in a list by themselves?

A. Well, that is not exactly a fair statement of the grouping here. The colors that are used for dyeing silk and wool chiefly are the ones that are grouped under the color-names red and orange, and so forth; then the vegetable extracts are put in a group by themselves, and then the colors used in calico printing are put in a group by themselves; the alizarines are chiefly used in calico printing and they are put in a group by themselves, and the azo colors and the phenol colors and the aniline colors and phtalic-acid colors are mixed up indiscriminately, the grouping being a color grouping.

Q. Under what heading?

A. Under the head of aniline colors, dye-stuffs, &c.

By defendant's counsel:

Q. All those three which you have mentioned being used chiefly for dyeing silk and wool?

A. Yes; those color dyes are used chiefly for silk and wool.

120 By defendant's counsel:

Q. The coal-tar dyes?

A. Yes, sir; the great application is for the dyeing of silk and wool, while the alizarine dyes are of especial value for dyeing cotton.

Q. These colors which are left in this case, about which Mr. Carl Pickhardt testified, are nearly all aniline violets or aniline blues, are they not?

A. I find one specimen of phenol color here—the coralline or rosolic acid—and another bottle of chrysoidine, which is one of the azo colors; then there are two ponceau and two scarlets which I do not identify by the titles.

Q. That is, in this sample case, which Mr. Carl Pickhardt testified to, you find the azo and the phenol and what you call the aniline colors all together?

A. I do.

Q. Speaking of the beautiful purple dye called mauve, discovered by Perkins, you said in that article referred to in Johnson's Encyclopædia: "The brilliancy and intensity of this color attracted the attention of chemists and dyers, and in a short time an entire new series of colors was discovered, by which the art of dyeing has been almost revolutionized." Explain that. What do you mean by that expression, "almost revolutionized?"

A. I meant by that that previous to the introduction of these dyes it had been customary to use these colors in their natural condition—that is to say, they cut the logwood up into chips, they ground the madder root up into a coarse powder, and when it was necessary to dye with those colors they were used in this impure condition, and it required a great deal of skill and judgment to use them properly, but the introduction of these aniline colors put into
121 the hands of the dyer what he had not been in the habit of using to any extent before—the pure coloring matter, definite in its character—so that instead of having a vegetable substance which might to-day contain one per cent. of color and at another time contain only half a per cent., and which contained a great many impurities, and which might undergo some decomposition and annoy him in its use, he had the pure color placed in his hands, and that made it very simple. Anybody can dye with the pure colors. It is only necessary to dissolve them in water and put the wool in it, and it takes the color. Any one could not do that with the old-fashioned colors, which required a great deal of skill to do it with any sort of success. That is what I meant by revolutionizing the art of dyeing.

Q. The azo and phenol colors have had something to do with the process of revolutionizing the art?

A. They are also pure colors, and the extracts from vegetable matter belong to the pure colors, too, and since the introduction of the pure colors made artificially the dyers have demanded that the vegetable colors shall also be purified, and that is the reason we find indigotine, which is the pure indigo color, and alizarine and purpurine, the pure madder colors; the safflower red, which is the pure safflower coloring matter. Those are to be found in the market now. The dyer has found that it was not necessary to fill his vat with sawdust, since the chemist purifies the plants for him and gives him the vegetable colors in an equally pure state with the artificial colors. He is not content to stop with the artificial colors and a few of the vegetable colors in the pure state, but chem-
122 istry has taught him to insist on having all of the vegetable colors made in the pure state, and it has been retroactive, and it has revolutionized the use of these very vegetable dyes which are so ancient in their application.

Q. How long since that revolution has been crowned with success as to the vegetable dyes?

A. When I first visited calico print works they always dyed their prints in dye-vats. They printed the mordant on the cotton and put the madder or the raw coloring matter into great vats of water and ran the mordanted cotton through it. Now the same works have given up that plan altogether, and they get the pure color and mix it with something that will generate the mordant on the application of steam, and print the color matter and the matter which is going to produce the mordant altogether on the cotton, and then they run it through a hot steam chamber and fix the dye. It has been growing all the time. There is no particular date or year when you can fix it, but it is a progressive art, as more and more discoveries are made.

Q. Had it progressed far at the date of the act of Congress we are now under—1874 or 1870?

A. Yes; alizarine was sold in 1870.

Q. That is the artificial madder color?

A. That is the artificial madder color.

Q. I mean pure madder.

A. Well, that is pure madder color, but they had made them at that time from the madder root, making them as early as 1870, but the calico printers had not yet given up their old method. Color-makers were just beginning to prepare pure madder—the pure madder colors, alizarine and purpurine—when these two German
123 chemists discovered that they could make them out of coal-tar, and that they did not require the madder root any longer. I presume that if the artificial alizarine had not been discovered and they could have extracted the color from the madder cheaply enough they would have revolutionized calico printing, even without the artificial alizarine. They have given up dyeing in the dye-vat and gone into steam printing. They had not done it to any great extent, because these colors extracted from madder were very expensive; at that time purpurine sold at $12 a pound, and that was extracted from the madder root.

Q. The manufacture of coal-tar colors; is that a distinct industry?

A. Yes; I think you may say so. It is in the hands of a very limited number of firms.

Q. And they make indiscriminately aniline, phenol, and naphthaline colors?

A. Not entirely. There are a great many patents, and they are owned by particular firms; say one firm exclusively manufactures one certain color; and then these patents hold in different countries, so that a firm in Germany may manufacture a color which it can only sell in America and cannot sell in England, or *vice versa;* but the factories run to specialties, more or less.

Q. Now, to make this thing clear, in order that we may understand you, we will take up the plaintiffs' imports once more. Take naphthylamine red; you testified on your direct examination that that is not an aniline color; is that so?

A. It is not an aniline color, because it is not made from aniline or any homologue of aniline; it doesn't contain aniline or any derivative of aniline.

124 Q. You say that naphthylamine was a homologue of aniline?

A. It is not a homologue in the common sense of the term. The homologues of aniline are toluidine, xylodine, and cumidine, and xymidine, and naphthylamine is not understood as a homologue; it doesn't differ by the common difference $C H_2$. In common language, we do not call a thing a homologue if the common difference is greater than $C H_2$; so if I should say "a homologue of aniline" any chemist would know that I meant one of those others that I have mentioned, or would know that I did not mean naphthylamine.

By DEFENDANT'S COUNSEL: Would you call naphthylamine red an aniline color if it was derived from a homologue of aniline?

A. Yes.

Q. Would you call it an aniline color?

A. Provided it is a derivative of amido-triphenyl-methane. Every aniline color can be referred back to triphenyl-methane.

Q. (Repeated.) Would you call naphthylamine red an aniline color if it was derived from a homologue of aniline?

A. I would not if the homologue had lost its peculiar character in the process by which the new dye is produced, if a new character results from the transformation; otherwise I should.

By DEFENDANT'S COUNSEL: It is not clear to me yet. You said that that was not an aniline dye because it was not homologous with an aniline.

A. You must understand that in using the term homologue you can take out certain chemical compounds and arrange them in a series in which their atomic relations would be homologous and in which there would be a common difference, and yet those bodies will not be homologous bodies, because they do not belong to
125 the same series—not endowed with the same properties.

Q. Now, what do you mean by properties in that connection?

A. Behavior with other things. The chemical property of a substance is the way it behaves when brought in contact with different substances.

Q. Take the aniline dyes and point out how they behave differently.

A. This dye is an acid; this is fast red.

Q. Are there any aniline dyes that are acids?

A. Yes, sir; naphthylamine red is an acid and forms salts with a base. Rosaniline red is a base; instead of forming salts with bases it forms salts with acids. You might say one is male and the other is female.

Q. Are there no acid anilines?

A. Acid fuchsine, as it is called, becomes an acid because it is united with sulphuric acid.

Q. How about Bismarck brown; is that an acid?

A. No; I think Bismarck brown is a base. I can tell by glancing at my authority (referring to book). Bismarck brown is a base.

Q. How about the alkali blues which you have stated are soluble in water?

A. They are aniline blues united with sulphuric acid.

Q. The dye in commerce is an acid?

A. Yes; they acquire acid properties by union with sulphuric acid.

Q. Then, so far as acidity is concerned, it doesn't do to say that that behaves differently from aniline dyes, does it, when some aniline dyes are an acid, and that is an acid?

A. No; it would not do to say that acidity distinguishes it from all aniline dyes.

126 Q. Point out how else it behaves differently from aniline dyes.

A. It behaves differently from the ordinary aniline dyes because it dyes in an acid bath, but the acid fuchsine will dye in an acid bath.

Q. How else does it differ from aniline dyes; how would it behave—I mean as you use that word "behave?" You mentioned particulars just now wherein aniline dyes differ from one another.

A. I mention those simply because those are exceptional in aniline dyes. In this way it is an exceptional case, because the regular aniline colors are bases; the original regular aniline colors are bases. But some of them have been given acid properties by combining them with sulphuric acid.

Q. What acid and what base will combine to make that?

A. This contains two elements which give it acid properties. In the first place, it contains beta-naphthol, and the naphthol is a phenol, and the phenols have acid properties, and many of them are called acids. Carbolic acid is a phenol; cresylic acid is a phenol; cresylic acid has the property of uniting with a base and forming a salt; so that phenol is a kind of an acid.

Q. Is naphthylamine an acid?

A. No; that is a base.

Q. Now, take naphthylamine with sulphuric acid and you get that, don't you?

A. No, you don't; it might be something else.

Q. What else might it be?

A. You take the naphthylamine and conjugate it with sulphuric acid, and then take the naphtionic acid, put the two atoms of nitrogen to it, diazo the acid, and then you have got to unite it with beta-naphthol. That makes this substance, so that by the
127 time you get it down you have destroyed the basic character of the original naphthylamine in converting it into a diazo compound and uniting that with beta-napthol.

Q. Point out some quality, if you can, or some respect, if you can, in which that naphthylamine red behaves differently from aniline dyes.

A. In the first place it dyes a different color from any aniline dye.

Q. A different shade of color?

A. Yes; a different color, so that it is substituted for cochineal, which no aniline dye is.

Q. Aniline dyes differ among themselves, don't they?

A. Well, they don't differ so far as this; this is a difference aside from any difference that occurs among any aniline dyes.

Q. Is the difference greater than between red and green, for instance?

A. Well, it is practically greater because it brings a new application which was impossible before. Previous to the introduction of these azo colors the dyer had to look to vegetable substances when he wanted to get scarlets, and the introduction of these azo dyes opened a new field, as did the introduction of alizarine. The common aniline dyes were good enough to dye silk and wool for certain colors, such as reds and blues and greens and intermediate colors, and a dyer was happy to get them for those purposes, but when he

wanted any other color, any shade of color, or practically any shade of yellow or any shade of scarlet, he still had to use the old dyewoods or animal dyes, and if he wanted to print calico he was obliged to use the madder root; so the introduction of the artifi-
128 cial alizarine filled up one gap and replaced madder for calico printing. The introduction of the azo colors and the phenol colors filled up another gap and covered the whole chromatic scale, so that the aniline colors, the phenol colors, the azo colors, the phtalines, or phtalic acid colors, and the alizarine or anthracene colors completed the series, and the chemical laboratory has completely covered the ground and supplied every demand that the dyer could make.

Q. Still aniline dyes differed in color and shade from each other?

A. They did differ within certain limits.

Q. They differed from one end of the prismatic scale to the other, didn't they?

A. Yes; but they missed——

DEFENDANT'S COUNSEL: Confine yourself to an answer to the question, Doctor.

Q. Now, can you point me out any particular in which these differ from aniline dyes, and in respect to which the aniline dyes do not differ one from another?

A. They are azo compounds.

Q. That isn't behavior, is it?

A. Oh, yes. Put a little tin and hydrochloric acid into an azo color and it is broken right up into its original constituents, which wouldn't happen in aniline colors. The first test we apply when we want to find out whether a color is an azo color is to ask, *it* by means of tin and hydrochloric acid, what it is, and immediately you will have it divide into its two component groups by breaking up the diazo link.

Q. Then, it is because if you add tin to it you break it up?

A. Yes; in other words, to find out what it is and how it differs from aniline colors you have to take it to pieces or dissect it;
129 you cannot tell by looking at it; you can tell by dyeing with it, because you know that no aniline color will produce that shade; so there are only two ways of distinguishing that from an aniline color—one is to dye with it and the other is to analyze it.

Q. Have you found out what diphenylamine comes from—yesterday you were uncertain?

A. Yes; by reducing dinitro-benzole.

Q. Does it come from aniline?

A. No; it doesn't come from aniline.

Q. How is it made, practically?

A. Aniline is benzole in which one hydrogen has been replaced by amidogen or $N H_2$.

By defendant's counsel:

Q. How is diphenylamine made?

A. No, I have got that crooked; there is diphenylamine and

there is phenyldiamine, and, without thinking, I confounded the two. The diphenylamine is ammonia in which two phenyls have replaced two hydrogens; that makes di- (two) phenyl—diphenylamine.

Q. What do you take, practically, to make it?

A. You can take aniline and nitratile it and reduce it, or you can reduce dinitric benzole.

By defendant's counsel:

Q. Aniline is a practical source of producing it?

A. Well, I don't remember whether they nitrate the benzole once and reduce it and then nitrate it again and reduce it again, or whether they nitrate it twice and reduce it once for all.

Q. And when you double the process don't that make phenyldiamine and not diphenylamine?

A. Perhaps I am confusing those two. The regular method given here (referring to a book) is to heat aniline and aniline hydrochlorate together to a certain temperature.

130 Q. Which of the plaintiffs' colors are made from that?

A. Orange IV contains that.

Q. And you say yet that it is not an aniline dye, though practically made from aniline?

A. Yes.

Q. Now, why?

A. Because it is an azo color and is based upon the linking atoms of nitrogen which binds together two aromatic groups.

Q. It is practically made from aniline?

A. Yes; they make the diphenylamine from aniline.

Q. As they practically make saffranine from the crude aniline of commerce?

A. Yes.

By plaintiffs' counsel:

Q. But they add another group to that?

A. They add another group to it, which modifies the general character of the whole substance.

By defendant's counsel:

Q. So that it don't have amidogen?

A. Yes, it has amidogen in one of the groups.

Q. Orange IV?

A. Yes.

Q. Wasn't that the test you gave yesterday of an aniline dye?

A. It was when you compelled me to keep together the aniline colors as commercially understood in 1870; you called upon me to point out some common quality; now, I would have said Bismarck brown is a different affair altogether, but you compelled me in your question to take them altogether and then find something alike in them, and so I set them up before my mind's eye and found what was like Birmarck brown and the others, and that was the only resemblance I could find.

Q. The amidogen?
A. The amidogen group.
Q. Did the amidogen first occur to your mind as something you invented on the spot?
131 A. No; I set them up before my mind's eye and looked at them to see what they had in common.
Q. You had known amidogen before that?
A. I had a good while, because I gave as my definition of the aniline class that they are from the amidogen derivatives of triphenyl-methane and Bismarck brown is not.

By defendant's counsel:

Q. And this orange IV is not?
A. This orange IV is not.

By defendant's counsel:

Q. How about orange II?
A. Orange II is not.
Q. That also is made from diazo-sulphenylic acid, and that from aniline, is it not, practically?
A. From diazo-sulphenylic acid—yes.
Q. The two oranges, orange IV and orange II, aniline enters into the manufacture of both, practically, does it not?
A. Yes; not necessarily but practically.
Q. But practically that is the way it is done, both as to orange II and orange IV?
A. Yes, practically, aniline is used in making both those colors.
Q. Now, you say that you tried to find a common quality when I called out the trade classification which united Bismarck brown with the aniline colors prior to 1870, and you suggested the amidogen. When was the amidogen discovered?
A. Oh, dear, that dates back so long ago I cannot say when; it is a great way back.
Q. The amidogen in the color, I mean?
A. Well, I don't know; I presume some of the vegetable dyes have amidogen in them.
Q. When was it discovered that these coal-tar colors had
132 that; when was that theory adopted as a basis of classification? Was it adopted prior to 1876?
A. I don't remember when that was first suggested.
Q. Can you look and ascertain?
A. The triphenyl-methane was first prepared in 1872, but when its existence was recognized in combination I don't know; it was first isolated in 1872, but it may have been known to exist years and years before that.
Q. When was this theory about the classification of aniline colors and these other colors that you have referred to accepted by chemists first?
A. It has gradually grown with the development of the industry and with the science.
Q. When was it found first?

A. It was known that picric acid was a phenol color before there were any aniline colors, so when the anilines were invented at the very outset they were known to belong to a class separate from phenol colors. Before any aniline color was made picric acid was a commercial article, so that as soon as aniline colors were made it was seen that they belonged to a different class from the phenol colors, so as new colors were discovered new classes had to be created to include them. At first the colors were generally made in a factory, in an entirely empyrical manner, and it was the duty of the scientific chemist to afterwards find out what the colors were, so that a color might be manufactured and sold for some time under some arbitrary name before it was known to what class it belonged; that was a matter of scientific investigation, and that was the reason that the Bismarck brown——

133 By DEFENDANT'S COUNSEL: Now, Doctor, that is not the question put to you. The question is, When was this theory first propounded?

The WITNESS: There wasn't any first propounding of it.

DEFENDANT'S COUNSEL: That answers the question.

The WITNESS: There was no particular date when it was first propounded.

Q. Was it not first propounded by Professor Fischer, of Munich, in 1876?

A. You mean the whole classification of colors?

Q. Well, the rosaline theory—the theory on which you have based your chemical classification of these articles.

A. You mean that they come from amido-triphenyl-methane?

Q. Do you know?

A. No; I do not.

Q. Can you find out?

A. I think there is a reference to it here in this book (referring to the book). It don't appear here exactly when it originated.

Q. Is there any other way by which you can find it?

A. Only by very carefully reading a great many pages of matter here, and I don't know whether I should get at it then.

Q. That, you say, was earlier than 1876?

A. I am not prepared to say what the date was.

Defendant's counsel:

Q. I would like to get from you the general position which these different coal-tar colors occupy in relation to other dye-stuffs. Now, tell me if I am right in this general definition or classification of dye-stuffs. They may be generally divided into three classes: First, the animal dyes; second, the vegetable dyes; third, the artificial or chemical colors?

134 A. That is one way of looking at them. I have not classified them in that way. That is a classification according to origin, regardless of their chemical character.

Q. Then the artificial or chemical colors again naturally subdivide

themselves into two classes, do they not? First, the pigments or insoluble metallic compounds; and, second, the coal-tar colors.

A. Yes.

Q. And all of these dyes which you have been talking about—both those which you call aniline and those which you call naphthaline and those which you call phenol—they all belong to this particular subdivision of this third division of dye-stuffs—that is, the coal-tar colors?

A. Yes; they are manufactured from coal-tar in some shape or other.

Q. And the introduction of coal-tar is what led to the revolution that you have spoken of in dyeing, is it not?

A. It is.

Q. And it is true of all these colors which I have mentioned—that is, these coal-tar colors—the true aniline, as you call them, and the naphthaline and the phenol and the azo colors, whatever the particular process or constitution may be—these different coal-tar colors are alike in being peculiarly adapted to the dyeing of silk and wool?

A. Yes, and cotton, too. The anthracene colors—one class of coal-tar colors—are especially useful on cotton, and most of the others are especially useful on silk and wool, but several of them are used upon cotton; they put fuchsine on cotton and wools.

Q. All these coal-tar colors are especially adapted to dyeing animal fibre without a mordant, are they not?

135 A. Yes; and so are all other colors to a greater or less extent. Animal fibres take colors readily; vegetable fibres almost invariably require mordants.

Defendant's counsel:

Q. Is that book that I now show you an authority on these topics?

A. Yes; that is a very good compilation, just as the other books are.

Q. Will you look at the statement that I now point out to you and tell me whether that is an authority? Can you tell me when that theory was propounded as a scientific theory?

A. It is the amido-triphenyl-methane theory. Well, I don't understand from this that it gives the date when the theory was propounded; but it says that Fischer was fortunate enough in 1876 to prepare in the laboratory the substance which is—he don't call "triphenylamine-thene," because it is a homologue of triphenyl-methane; it is the tolyl-diphenyl-methane. Fischer succeeded in making it, and making the thing was tangible proof of its existence, and it became then the nucleus around which all the aniline colors were grouped.

Q. After he succeeded in making it?

A. He made this particular hydrocarbon, but that he originated the theory I don't know, and it don't appear so here.

Q. Without reference to the speculation on the subject, it may have been speculated on by Aristotle, but the grouping was made after he discovered the thing?

A. Well, this cleared it up and settled it; he manufactured the article, and that removed every possible doubt.

Q. So that the scientific grouping that you give us now did not get a basis of fact until 1876; is that so?

136 PLAINTIFFS' COUNSEL: He has grouped the coal-tar colors, and also grouped around a single nucleus the aniline colors. To which grouping do you refer? I understand you to refer to the grouping of the aniline colors.

The WITNESS: Yes; this is the grouping of the aniline colors around the triphenyl-methane.

Q. The triphenyl-methane nucleus was discovered to be in existence in 1876?

A. Yes.

Q. That is what you say, is it?

A. Yes; this isn't triphenyl-methane simply; it is homologue of it. I referred to triphenyl-methane when you asked me before. Triphenyl-methane was produced in 1872; triphenyl-methane was produced by Kekule in 1872, and then the homologue of that tolyl-diphenyl-methane was discovered in 1876.

Q. Do you know any chemist who had advanced the grouping on the triphenyl-methane theory as early as 1870?

A. No; I don't remember it.

Q. That grouping had not been suggested then by scientists, to your knowledge?

A. No; we had no such grouping at that time.

Redirect by plaintiffs' counsel:

Q. And the other grouping that you speak of—the arrangement in classification of coal-tar colors into phenol colors, aniline colors, phtalic-acid colors, and azo colors, and so forth—was the one that you said made itself as those various classes of colors were discovered and identified?

A. Yes.

Q. And that had no particular time of being advanced because it began to be made just as soon as they had got two of those classes—as soon as they made two of those classes—that is, when the

137 classification was made; is that what you say?

A. Yes.

Q. Now, the phenol colors, or some of them, were discovered and came into use anterior to the introduction of any of the aniline colors?

A. They did.

Q. What were those besides picric acid?

A. Picric acid was the most important; then after that came along the dinitro-cresol, which was another one of them, and after that came along the dinitro-alpha-naphthol; that was another; then the sulpho-acid of dinitro-alpha-naphthol was another; then rosalic acid was another. Those are among the most important.

Q. And those have never been commercially or chemically, to your knowledge, classified with the aniline colors?

A. I can hardly say that I don't think picric acid was ever confounded with them, because that was established before aniline colors came, but when the Manchester yellow first came out I think very likely it was confounded, for those colors are put in the trade without telling what they are.

Q. They are put into the trade under some fancy name?

A. Some arbitrary name. No chemist ever confounded them; no one who was capable of testing a dye and analyzing it and finding out what it is ever confounded them.

Q. What is gallein?

A. Gallein is one of the phtalic-acid dyes; it is produced from phtalic acid and pyrogallol, I think (referring to a book); yes; from phtalic acid and pyrogallol; it is one of the phtalic-acid dyes, and belongs to the same class as resorcine red or eosine.

Q. When was that discovered and brought into use?

138 A. In 1871 it was discovered; 1871 is the first reference to it in scientific journals.

Q. Coeruline?

A. That is produced by the action of sulphuric acid or gallein.

Q. That, then, you class as a phtalic-acid dye?

A. Yes; that is a phtalic-acid dye.

Q. That was discovered after gallein?

A. That was discovered after gallein.

Q. Soon after?

A. I don't know whether I can find that out (referring to book). It doesn't appear here when it was introduced.

Q. Rosolic acid?

A. Rosolic acid is a very old substance, one of the earliest of all the colors discovered; that is a phenol color, prepared from carbolic acid.

Q. That was discovered before the aniline colors?

A. Before the aniline colors.

Q. As well as picric acid?

A. As well as picric acid.

Q. And alizarine?

DEFENDANT'S COUNSEL: What is the materiality of that?

PLAINTIFFS' COUNSEL: The theory has been advanced that the act of 1874 by the term aniline intended to embrace all coal-tar colors. These that I am naming over are all coal-tar colors, as appears from the testimony here—derivatives of coal tar—and are all provided for specially or by action of the Department from the time of the passage of the act down to the present time; either admitted free or admitted at 20 per cent. duty.

(The question is admitted.)

Q. Alizarine is a coal-tar color?

A. Alizarine is a coal-tar color manufactured from anthracene.

Q. That was discovered after aniline?

139 A. That color occurs in the madder plant; that is a case in which the color created in the laboratory is identical with the color which exists in the madder root, and has existed there

ever since the madder root began to grow, so that differs in that respect from the others in that it was not new to chemists.

Q. Simply the method of obtaining?

A. Simply differs in the fact that it occurs in nature, where the other colors have not yet been found in nature. They may occur there, but have not yet been identified.

Q. Aniline isn't a color in nature except as it is found in indigo?

A. It only occurs in indigo. The destruction of indigo results in the production of a great many things, and aniline is one.

Q. And the azo-benzole—that is a modern color?

A. It is.

Q. That is a recent discovery?

A. It is.

Q. That is one that you have classed as azo colors?

A. That is one of the azo colors.

Q. You were examined as to how these different dyes acted, and you stated that you told a chemical substance in one way by the way it acted, and that the only other way was by taking it to pieces to find out what it was made of, and that you could not distinguish between these different coal-tar dyes by simply looking at them. Can you distinguish by looking at them between the coal-tar dyes or colors and the colors derived from vegetable and animal matters, which you have testified to, simply by looking at them?

140 A. Not if the vegetable colors are freed from the vegetable tissue.

Q. Certainly. I mean the pure products.

A. No; you cannot distinguish the concentrated vegetable colors from coal-tar colors by appearance.

Q. Any more than you can distinguish one coal-tar color from another?

A. No.

Q. And you cannot distinguish those vegetable extracts from each other simply by looking at them?

A. No. You would know if you looked at indigotine, which is blue, that it is distinct from saffronine, which is red. You would not know on looking at them that they were not both aniline colors.

Q. But when you came to dye with them you could tell, could you not?

A. You could if you made certain tests—that is, they will all dye, and they all dye their characteristic colors.

Q. And each dye has its characteristic color?

A. Each dye has a characteristic color.

Q. And each of these classes of coal-tar dyes that you have spoken of have their characteristic colors, as you have explained?

A. Yes.

Q. And when the district attorney asked you if, from the aniline dyes as you have defined them, you could not get the entire range of the scale of colors and go from one extreme to another, you answered "Yes," and he stopped you from further answering. Do you get the entire scale of colors in orderly sequence or are there some intermediate colors which cannot be obtained from them?

A. I was asked the question if the aniline colors do not
141 produce both ends of the chromatic scale, and I had to say "yes," because the two ends of the chromatic scale are red, which is one end, and violet, which is the other end. We have red aniline colors, and we have violet aniline colors; but we have no yellowish-red aniline colors and no orange aniline colors; so there is a gap in the chromatic scale which is not filled by the aniline colors, but which is filled by the azo colors.

Q. In stating how the colors behave, the difference of behavior you spoke of, aniline not being an acid color, but that some were acid, how is it that those which are acid are acid?

A. It is because they have hydrogen replaceable by a metal, and so, having hydrogen replaceable by a metal, it was called an acid. After some study, it was found that there were two kinds of bodies having hydrogen replaceable by an acid, and the chemists decided to call one class either alcohols or phenols and to call the other class acids simple. Carbolic acid is one of those acids which we now qualify by calling it a phenol, naphthol is another, cresol is another. They have acid properties, but they differ in some respects in their constitution from certain other acids. Chemists have concluded to call them phenols. So, although they are called in commerce acids, we group them together as phenols—carbolic acid and rosolic acid, naphthol, and all that class of bodies.

Q. This acid fuchsine—that was fuchsine with an acid added to it?

A. Yes; the only way that acquires acid properties is by sulphuric acid added to it.

Q. For what purpose is that?

142 A. That changes its character and makes it possible to dye in an acid bath with it, which is an important quality. It enables it to be mixed with some colors that are dyed in acid baths.

Q. Is it not an essential quality of being an aniline dye that it has that acid quality?

A. No.

Q. It has something added to it for the purpose of a particular use?

A. Yes; it does not change the color, but makes it convenient to use it under certain circumstances where the aniline red simple could be used.

Q. It does not change the color?

A. No.

Q. Is there any other distinction in the way these two classes of colors—the azo colors and the aniline colors—act in the presence of albumen?

A. Yes; the aniline colors can be fixed on cotton with albumen and the azo colors cannot.

Q. Then when you take one of our plaintiffs' colors here—the red or the orange—and dye with it you find that is different and distinct in the colors that it produces from any of the aniline dyes?

A. I do. It is differently compounded, a different article, a different thing each of them. Plaintiffs' Exhibit No. 4, the patent I

referred to yesterday, is the patent which covers orange II and orange IV, and I have made both of those according to the specifications of this patent, and I found them to produce a dye identical with the dyes known as orange II and orange IV. I have purchased samples from this firm of orange II and of the naphthylamine red, and they were the same as those which are always known by those names.

143 Exhibit No. 5, which is the patent for naphthylamine red, I find it correctly describes the dye known as naphthylamine red. That formula followed will produce it. These azo dyes, known as naphthylamine red and the orange II and orange IV, have not replaced any aniline dyes. They have replaced cochineal and flavine, vegetable dyes or animal dyes. Xylodine is a base like aniline. It furnishes material which is used in the manufacture of some of the azo colors. Xylodine was not recently discovered. It is a material employed in the manufacture of some of the ponceau colors. The ponceau R and ponceau G are azo colors prepared with the aid of xylodine. They are both azo colors. Some crude aniline might contain xylodine, but the aniline oil manufacturer tries not to have any there.

Q. The amended title of the chain of patent dated August 19th, 1879, is: "Improvement in coloring matters obtained by the reaction of the dazoic derivatives of sulphanilic acid upon the amines, the amines and the phenols." Is that or not an accurate statement of what the patent is for?

(Objected to as immaterial.)

A. It is.

By defendant's counsel:

Q. Is sulphanilic acid made from aniline practically?

A. It is.

By defendant's counsel:

Q. The original title of this patent, which was November 19th, 1878, was "a new and useful improvement in coloring matters derived from aniline and its homologues." When the inventor of this new and useful improvement took out the original patent with that original title he was mistaken, according to your view as a chemist, in what it was that he had invented, was he?

A. No.

144 Q. Well, does that original title, according to your view, correctly express what this is?

A. To a certain extent it does and to a certain extent it doesn't.

By plaintiffs' counsel:

Q. To what extent does it and to what extent does it not?

A. The sulphanilic acid, which is one element in the processes of this patent—this sulphanilic acid can be most cheaply made from aniline, and when it is made from aniline these colors might be called derivatives from aniline, because they put aniline into the

kettle; but the color could also be made from something else without aniline. Consequently, to call them derivatives of aniline is to go further than the facts warrant.

By defendant's counsel:

Q. To run against the tariff?

A. No; go further than the facts warrant, and the correction of the title places the color where they belong under the azo colors.

By defendant's counsel:

Q. That is according as chemists now understand the theory to-day. If they should begin a new suit to-morrow and want a new chemical theory?

A. No; this title originated before any suits were brought or any suits proposed.

Q. What are the homologues referred to in that original title, as you understand it?

A. Toluidine and xylodine.

Q. Does it mention them in the patent?

A. I don't remember whether they are mentioned in the patent or not.

145 JOHN M. ORDWAY, being duly sworn and examined as a witness on behalf of the plaintiffs, testifies:

I am at present professor of industrial chemistry and metallurgy in the Massachusetts Institute of Technology, in Boston; I have been there since 1871; I was formerly manufacturing chemist. I began the study of chemistry when I was thirteen years old; I am now sixty. I was concerned in the manufacture of chemicals in Roxbury, Massachusetts, and in Johnson, Rhode Island, and was afterwards chemist, and then manufacturer, and then superintendent of the Manchester Printing Works, in Manchester, New Hampshire. Afterwards I was engaged in chemical manufacture in South Boston, and also in Johnston, Rhode Island, again. I was engaged in the manufacture of the larger chemicals; those that are used in dyeing and calico printing. The Manchester Print Works was engaged in the printing of calicoes and delaines. I have had occasion to become acquainted with anilines and other coal-tar products on account of my business. I went to the Manchester Print Works at the time that aniline colors were first being introduced into this country, in 1861, and my first business was to apply the aniline colors to delaine cloths. Delaine cloths are those that consist of a cotton chain and wool filling; those that were formerly used for ladies' dresses, but are now out of date in this part of the world. I am acquainted with naphthylamine red, orange II, and orange No. IV; they are not aniline colors.

146 Q. What are aniline colors? In your answer you must state if there is any difference in aniline colors at the present time and as they have been known back to 1861, when you say you first became acquainted with them.

By DEFENDANT'S COUNSEL: I object, because it is not limited to the date of the act.

(Objection overruled. Defendant excepts.)

A. By aniline colors I understand those colors which are produced from one of the anilines by the union of three or more molecules of one of the anilines with each other, with the elimination of hydrogen, the distinctive character being that they still retain the group N H_2—that is, one atom of nitrogen and two of hydrogen—which gives them an alkaline character—a basic character.

Q. That is the amidogen?

A. That is the amidogen; yes. What is true at present was true in 1861, as far as these things were known in 1861. In 1870 it was precisely the same; they were aniline colors in 1870, and were also aniline colors, so far as they were known, in 1861, and are now. An aniline color is an aniline color and always will be for all future time; it can be nothing else.

Q. What aniline colors were known in 1870?

A. The first aniline color that I had to do with was Perkins purple. The next was what was called fuchsine in those days—a very impure color, which we now call rosaniline. These were the only colors distinctly known at that time, Perkins purple and rosaniline; that was in 1861. In 1870 there had been added the Hofman's violets, as they call them; there had been added aniline blue and phosphine, though phosphine is somewhat doubtful. You don't know what the composition of it is precisely, but it was
147 made from aniline residuum. There was also known what was not sold as a dye, the aniline black, a color produced on cloth. That is not a dye as a commercial article; it becomes a dye when it is formed on the cloth or in the cloth. It is produced in the cloth by oxydation, produced by a process similar to that by which aniline red is produced, or rosaniline.

Picric acid has been known for more than a hundred years. Rosolic acid was known, but not as an article of commerce, in 1870. In 1870 rosolic acid was known under the name of aurine. They are dyes, but not aniline dyes. They are derived from coal-tar or coal. Picric acid may be derived from other things, but it is generally derived from coal-tar. The picric acid and rosolic acid would be called benzole colors; they have no relation to the aniline colors. Naphthylamine red I know; it was discovered in 1870; I think it became more fully known in 1873. This patent, Exhibit 5, describes the process of manufacturing them. It is not an aniline dye; it is one of the naphthaline colors or one of the azo colors; you can call it either a naphthaline color or an azo color.

Q. What are the distinguishing differences between that and the aniline dye?

A. In the azo colors we have not the crude N H_2, the crude amidogen, but in place of it we have two atoms of nitrogen.

By defendant's counsel:

Q. What is that called; what is that chemical name for the two atoms?

A. There is no name for that group; it simply gives a different character entirely to the dye-stuffs.

148 Q. What is the group; what is the chemical formula of the group?

A. N N. There is a chemical difference in this respect: the azo dyes are sulpho-conjugated and have an acid character. There is another difference: these dyes require an acid in dyeing. These dyes require acids in dyeing wool or silk. The azo compounds require the addition of an acid in dyeing; they give colors which are not affected or are but little affected by alkalies or by acids. Colors have no affinity for albumen, as far as we know, and cannot or have not, as far as we know yet, be fixed on cotton. The azo colors have no affinity for albumen. The aniline colors must not be used with acids; I mean in general. There is one aniline color that can be used with an acid, but I mean in general the aniline colors must not be used with acids, but the wool or silk must be nearly free from aniline or alkalies; the wool or silk which is to be dyed with the aniline colors must be clean and no acid must be added to the bath. The aniline colors have a strong affinity for albumen, and may be fixed on cotton cloth with the help of albumen. Most of the aniline colors may also be fixed in cotton by the help of tannin combined with the oxide of tin or tannin combined with the oxide of antimony, or with the help of what is called the Turkey-red mordant—oxidized oil. The aniline colors are readily destroyed by exposure to light; they are not fast colors and are generally recognized by dyers and others as not being fast colors. The azo colors will bear exposure to light and are very fast, more so than

149 most of what may be called natural colors—that is, those produced from woods, roots, etc. Those are the principal distinctions that I think of at present. In the chromatic scale of colors we may have anilines with various shades of blue—that is to say, an aniline red is never scarlet and cannot be made scarlet; it always is crimson; it inclines to blue, and this has always been a want seriously felt by dyers. They have desired to obtain good colors—brilliant colors—that would replace cochineal; but the aniline colors cannot replace cochineal, and nothing was known which could until the discovery of the azo dyes. The other colors made from aniline or the other aniline colors shade on blue—that is to say, there are purples and there are blues. I am not aware that there is any true aniline yellow. Aniline yellows are somewhat doubtful in character. With the proper aniline dye-stuffs we obtain various shades of crimson and purple and blue. The aniline dye-stuffs are distinguished by a property which is known to chemists—that is, when they are moistened with strong ammonia or with strong chlorhydric acid after being applied to the fabric they are decolorized. The color is restored again when the fabric is washed with water. They are decolorized when the fabric is moistened with strong chlorhydric acid or with strong ammonia. The color is restored when the fabric is washed with an abundance of water. This is not the case with the azo colors. I believe I have stated the most important distinctions between them. I am familiar

with the resorcine reds—not this particular quality; resorcine red J or resorcine Roth J. This particular one is not one that I
150 have tried myself; it is one of the resorcine reds in which a part of the bromine is replaced by iodine, but its general properties are the same as those of eosine—what is called eosine. It is not an aniline color; it is a mixture of benzole and naphthaline. It is used as a color and not as a dye-stuff, although it is sometimes used as a staining material, not as a dye-stuff proper. It is used sometimes to stain cotton. It is used as a pigment—that is to say, the eosine colors are used to make lakes, which are used as pigments for application to paper and other materials. The eosine was discovered in 1874 or 1875, I cannot be sure which. It was discovered, I think, in 1874. It did not come into use until 1876, or after. I have not manufactured the dye-stuffs themselves, but as a manufacturer of goods I have become acquainted with some of them, and was so acquainted prior to 1870. I can't say that I know all of the dyes known in trade prior to 1870, in this country, as anilines, but I know most of them, or did know. I knew of aniline red or rosaniline, as it is called sometimes, and the Perkins purple, Hofman's violet—daliah, as it was called, and phosphine, and aniline blue, and Nicholson's blue, and the aldehyde green, though I never used the aldehyde green to any extent. I knew Bismarck brown but never used it. It was sometimes called an aniline color. I never considered it as such myself. I knew of a color named Manchester yellow. I did not know it by that name before 1870. I am not familiar with the Manchester yellow. I cannot say that I was familiar with said color. I never had occasion to buy any Bismarck brown; never had any occasion to order it. I have seen it and know what it is, but I have had no occasion to buy it, no
151 occasion to apply for it, and therefore I am not familiar with the commercial designation at that time.

Q. I think you said yesterday that the azo colors, plaintiff's importations, are not aniline dyes, because they have no amidogen.

A. Yes; I said so.

Q. Do you say that?

A. Yes, sir.

Q. What function in dyeing does the amidogen play?

A. It gives the characteristic properties to the aniline dye-stuffs.

Q. When you have an aniline dye does the amidogen play any part in the application to the goods?

A. The whole plays a part in the application; we can't separate the amidogen. We know it gives the dye-stuff its characteristic properties. Without that material it would be no dye-stuff, or it would be a different stuff.

Q. Do you say that everything that has the amidogen is an aniline dye?

A. I do not; I say that this is characteristic of aniline dye-stuff in general; but I do say further that there must be some dye-stuffs which contain amidogen which are not properly classified with the aniline colors or with the aniline dye-stuffs.

Q. Do you agree with Prof. Chandler that orange IV has amidogen in it—plaintiff's import, orange IV?

A. Orange IV, I think, has.

Q. Has amidogen?

A. It has some.

Q. And it is an aniline; aniline plays a part in its manufacture?

A. The aniline is the starting point of one part of the material.

Q. Of that importation?

A. Of that article, yes, but not a characteristic part.

Q. It is an essential part, isn't it?

152 A. No; it is essential, of course, but it is not a characteristic part.

Q. The amidogen is characteristic, isn't it?

A. It is characteristic of aniline dye-stuffs.

Q. Characteristic of orange IV? It would not be orange IV if it did not have the amidogen?

A. Certainly it would not be orange IV if it had no amidogen, but amidogen is not necessarily characteristic of it. It is that which gives the predominant property that is characteristic and not a single constituent. These articles all contain carbon, but carbon is not the material which gives the dye, which gives the color.

Q. Is it your idea that it is amidogen that gives the color?

A. No, it is not; but the amidogen is an essential part of the aniline dye-stuffs.

Q. Amidogen is one part of orange IV?

A. A small essential part.

Q. Small in the number of atoms?

A. Yes.

Q. It is the same number of atoms wherever it is, isn't it?

A. It depends upon how many atoms or how many molecules or how many groups of amidogen there are in a molecule. There may be one, two, three, or more.

Q. The difference, then, between orange IV and aniline dyes is that there are fewer amidogen groups in orange IV than in any aniline dye?

A. I won't say that that is the difference, but that is a difference.

Q. Is that true?

A. Yes.

Q. Is that true, that there are more amidogen groups in orange IV than in any aniline dyes?

A. Than in any proper aniline dyes; I think it is.

Q. Then it is true that neither having been made from

153 aniline in the process of manufacturing nor the presence of amidogen makes a dye of aniline dyes, is it?

A. It is true.

Q. You say that azo dyes differ from the aniline in having an acid character?

A. Yes.

Q. Then, in using that term, did you refer to the articles as they are dealt in in trade?

A. I referred to those that are proper aniline dye-stuffs—a great many things.

Q. Dealt in in trade. I don't mean as you find them in the laboratory, but dealt in in trade—as they come and go. Did you mean to say that none of what you call proper aniline dyes have an acid character?

A. I do not.

Q. Most of them do have, don't they?

A. No.

Q. As they come along?

A. No, sir; none.

Q. Nearly all of them are sulphos?

A. None, except the sulpho-acid of fuchsine.

Q. How about Nicholson blue?

A. That is a supho-acid compound.

Q. That has an acid character?

A. That has an acid character.

Q. And how about methyl violet?

A. Methyl violet is one that I am not familiar with.

Q. How about the water blues?

A. The water blues are modifications of Nicholson's blue.

Q. And they have an acid character?

A. They have an acid character; yes, sir.

Q. Isn't it true that nearly all aniline dyes, as they are now imported, have that character, and that they nearly all have been sulphonated?

A. Yes, sir.

154 Q. Mention one that has not.

A. The rosaniline is the chief one; Hofman's violets haven't and the iodine green has not. Some of the blues have and some have not.

Q. Are you familiar with the way these things are imported and dealt in in the trade?

A. I am not familiar with the commercial usages at the present time.

Q. And how long is it since you have been?

A. I have had occasion to buy.

Q. No; I mean generally familiar, not by retail.

A. I am generally familiar with it, but I have not the same familiarity as one who has——

Q. You don't know that it is not a fact that nearly all proper aniline dyes—those dyes we all agree are anilines—are now sulphonated, as they are usually dealt in, and have an acid character?

A. Yes, I do. I know they are not.

Q. And a large proportion of them?

A. I can't say what proportion, for I don't know what relative amounts are so.

Q. How about the green?

A. The greens are not acid compounds.

Q. Still, it is true you agree, do you not, that many of the true anilines have an acid character?

A. Not many; a few.

Q. Some of them?

A. Some.

Q. Therefore, to say that the plaintiffs' importations have an acid character is not sufficient in itself?

A. It is not sufficient in itself, certainly.

Q. (Continuing.) To distinguish them from anilines?

A. Certainly, that is not sufficient in itself.

155 Q. It is true also, is it not, that many of the azo dyes are bases or some of them not acids?

A. Many of the azo dyes.

Q. Some of them; I don't say many.

A. I think not; I am not aware that many are.

Q. Do you know the color helianthin?

A. I do not.

Q. Do you know the color amido-azo-benzole yellow?

A. Not by that name.

Q. Do you know it by any name?

A. Yes; I should know what the color was by the name.

Q. Is it a base or an acid?

A. It is a base.

Q. Is it an acid?

A. It is not an acid.

Q. Has it an acid character?

A. It would be neutral in character.

Q. Then it is an azo color?

A. An azo color; yes.

Q. Whether or not orange IV is a dye before it is sulphonated?

A. It is.

Q. It is a dye?

A. Yes, sir.

Q. It is a base?

A. It is not a base.

Q. A neutral?

A. It is of an acid character.

Q. Before it was sulphonated?

A. Before it was sulphonated.

Q. What do you mean by an acid character?

A. I mean that it will combine with bases to form salts—any substance that will combine with bases to form salts.

Q. Do you know the color chrysoidine?

A. I knew of it; I am not familiar with it.

Q. Is that an azo color?

A. That is an azo color.

Q. Do you know whether or not it has an acid character?

A. It has an acid character.

Q. Then it is true, is it not, that with regard to azo colors

156 and with regard to aniline colors some of them have an acid character and some have not?

A. Some have an acid character. Some of the aniline colors have an acid character added to them when they are sulphonated, but before that they are basic.

Q. Isn't the Nicholson blue a different article of commerce from

the blue before it was Nicholson blue? Isn't it a soluble blue, soluble in water, and a different article in commerce from the insoluble blue?

A. It is.

Q. The aniline dye, which is an article of commerce, is called Nicholson blue and has an acid character, has it not?

A. It has an acid character.

Q. Then it is true, is it not, that with regard to both azo and the aniline colors some of them have an acid character and some have not?

A. It is.

Q. So that that is not sufficient?

A. I have said before that that is not sufficient of itself.

Q. You say that the azo dyes require an acid in dyeing wool or silk; do you say that?

A. Yes.

Q. That is true of all the aniline dyes that have an acid character, isn't it?

A. No; it is not.

Q. Which one is it not true of?

A. Nicholson's IV does not require an acid in dyeing.

Q. Isn't it practically used with an acid?

A. I think not.

Q. How is it used?

A. It is used by itself and generally with an alkali; afterwards with borax instead of an acid.

Q. Can you name any other acid aniline that does not require an acid in dyeing?

A. The sulpho acid of fuchsine does not require acid; an acid is generally used with it, though.

157 Q. But it is true that, speaking generally, the aniline dyes which have an acid character require an acid in dyeing?

A. It is not.

Q. It is not generally?

A. It is not true; no, sir.

Q. Do none of them require an acid in dyeing?

A. Not that I aware of. None that I am aware of do.

Q. What do you mean by saying that the azo dyes require an acid in dyeing?

A. The azo dyes are generally combined with potassium or sodium, and there must be an acid to set them free.

Q. That is, to unite with the sodium?

A. To unite with the sodium or potassium.

Q. To set free the dye?

A. To set free the dye.

Q. The acid and the dye exist apart from each other?

A. Yes; they can exist apart from each other.

Q. Do you know nigrosine?

A. I know of it.

Q. Do you know the soluble and the insoluble nigrosine?

A. I am not familiar with the two salts.

Q. Do you know whether or not one of them has an acid character and the other has not?

A. I am not familiar with it; I wouldn't undertake to say.

Q. Are you familiar with induline?

A. I am not.

Q. You regard them as aniline dyes?

A. No; I do not.

Q. You do not regard nigrosine or induline as anilines?

A. I do not.

Q. Do you regard saffranine as an aniline dye?

A. No.

Q. You do not agree with Professor Chandler as to those three?

A. Those I am not sufficiently familiar with to pronounce on, but I have never been accustomed to consider them as such from my reading.

158 Q. Well, then, you really would doubt everything that practically is not obtained from rosaniline, would you?

A. Certainly I should. The base of aniline dye-stuffs is rosaniline; that is what they are made from.

Q. Say that it would take toluidine to make saffranine; you wouldn't call that an aniline dye?

A. Toluidine belongs to the anilines; aniline is a generic term; it is a general term; toluidine belongs to the anilines.

Q. It is an aniline?

A. It is an aniline; yes.

Q. What else belongs to the anilines?

A. Xylodine is one of the anilines, and cymodine is one of the anilines; all that belong to that homologous series, all of the alkalies.

Q. Who calls them so? You and Prof. Chandler seem to have a different standard about those things.

A. They are called so in the books; scientific men generally, I think, call them so.

Q. Well, in that particular series, there is the common difference of N h_2?

A. We should call those anilines provided they had the N H_2 in them.

Q. Nevertheless you don't regard saffranine as an aniline dye?

PLAINTIFF'S COUNSEL: N H_2 is amidogen that you speak of?

The WITNESS: N H_2 is amidogen. Saffranine I don't regard as an aniline dye.

By DEFENDANT'S COUNSEL: As to the naphthylamine, has the naphthylamine got N H_2 in it?

A. It has.

Q. Then it is an aniline, isn't it?

A. No, it is not; it has not the benzole nucleus in it; it has another base. The basis of naphthylamine is carbon$_{10}$ and hy-

159 drogen$_8$ ($C_{10}H_8$); it is an entirely different series from the benzole series; therefore the naphthylamine is not an aniline.

Those that belong to the same homologous series as benzole are anilines.

Q. Tell me how saffranine is made.

A. I am not familiar with its manufacture. I could only tell by referring.

Q. Have you got any book that will refresh your memory?

A. I have not got any book here. I have brought none with me. I can tell you the position of it. Saffranine consists of carbon$_{21}$ (C_{21}, H_{20}, N_4), hydrogen$_{20}$, nitrogen$_4$.

Q. Do you find amidogen there?

A. I cannot say; these are orange.

Q. What does the amidogen look like when you see it?

A. You don't see it.

Q. And it is not a thing that exists?

A. It is not a thing that can be isolated; it is a group which enters into combination, but cannot be shown by itself.

Q. Is it anything more than a quality?

A. Yes; it is more than a quality; it is a group of atoms.

Q. It is a group of atoms that never exists as a group, is it?

A. Yes; it exists.

Q. By itself?

A. Not by itself.

Q. It does not have a separate existence; its existence is theoretical?

A. Theoretical; it may be so called.

Q. You say that it exists because you have a system of graphic illustration of how that may be combined, don't you?

A. Yes, sir.

Q. And because in the figures which you draw on here you can represent it as separately existing; is that about the sum of it?

A. That is not the sum of —; no, sir. We can transfer
160 this group from one thing to another.

Q. You can transfer those atoms; you can transfer one atom of nitrogen and two atoms of hydrogen?

A. We can transfer the group.

Q. To return to the saffranine; won't you tell me why you say saffranine is not an aniline dye?

A. I said that because the result of my past reading is to convince me that it was not. I cannot give you at this moment the mode of manufacture.

Q. But the reasons are?

A. I can't give you the reasons precisely; I can't define them.

Q. Applying all this list of differentia between plaintiffs' imports and what you call anilines to saffranine, are these all the differences, or do you say that there are some other reasons than these?

A. The reasons that I have are reasons that have been familiar with me in times past. I cannot recall any reason at present. Every one has impressions and beliefs for which he cannot give an immediate reason, and I have an impression and belief, not in connection with this case at all, but with previous reading, from previous studies, that saffranine is not an aniline color. I have had

occasion to study up the subject in reference to lectures to my students. I don't recollect all these things from time to time. I am obliged to post myself up from time to time, as every one is. Every one must cram for a lecture; and from cramming in past years I have been convinced that saffranine is not an aniline color.

Q. You did not cram for this lecture on this point?

A. I have not crammed for this.

161 Q. Saffranine is made from aniline—that is, aniline enters into its manufacture?

A. It is made from one of the anilines, I believe. I think toluidine comes into it, but I should prefer not to give any account of it, because I am not familiar with the mode of manufacture; I could study it up.

Q. You do not know whether it has the amidogen or not?

A. I should prefer, as I say, to say very little about it.

Q. Has it got that benzole nucleus that you referred to?

A. That I should prefer to say nothing about. As I say, I can't tell you the exact composition of it or the arrangement of the atoms.

Q. To get this thing distinctly, your impression, from past reading and experience and preparation in cramming for your lectures, is that when Professor Chandler says this is an aniline dye he is wrong?

A. Yes; that is my impression; I think he made a mistake there.

Q. Now, as to nigrosine; is Prof. Chandler wrong about that, according to your judgment?

A. My judgment of nigrosine is that it is not an aniline color; that it is one of the azo colors.

Q. And so to induline?

A. Induline I am not familiar with. However, I believe that it is in the same category as nigrosine; that it is another modification of it.

Q. What as to Bismarck brown?

A. Bismarck brown is an azo color.

Q. Then Prof. Chandler is wrong, in your judgment?

A. I don't know what Prof. Chandler said; I did not hear him.

Q. If he said it he was wrong?

A. I think so.

162 Q. Now, in stating a moment ago that you did not regard naphthylamine as an aniline you said something about the benzole nucleus.

A. Yes.

Q. Was that the same thing as what Prof. Chandler calls the triphenyl-methane?

A. Well——

Q. Do you know what the triphenyl-methane is?

A. I am not accustomed to that.

Q. Do you know what it is?

A. Yes; I should know what triphenyl-methane was, but naphthylamine is not one of that sort. Triphenyl-methane would be a compound in which carbon is the central atom, and around it are grouped one atom of hydrogen and three atoms of phenyl. It has

no relation to napthylamine, but it indicates the composition of the proper aniline dye-stuffs; they are triphenyl-methanes.

Q. Anything that does not have triphenyl-methane is not an aniline dye?

A. I should not call it so.

Q. Do you know methylene blue?

A. I do.

Q. Is it an aniline dye?

A. I think not; that I could not testify about immediately.

Q. If Prof. Chandler said it was you think he is mistaken?

A. No; I would not pretend to pass a judgment on that.

Q. Do you know whether it is known or not whether methylene blue has the triphenyl-methane?

A. As I say, I would prefer not to say anything about methylene blue.

Q. Can you refresh yourself?

A. I do not know whether I have any note of methylene blue or not; (having examined memorandum) I have no note of methylene blue.

163 Q. Do you know chrysoidine?

A. Yes.

Q. Is that an aniline dye?

A. No.

Q. If Prof. Chandler said it was you think he was mistaken?

A. Yes; I should say he was mistaken.

Q. What is that made from?

A. Chrysoidine is one of the naphthol colors, I think; I cannot give you the exact mode of manufacture.

Q. Does aniline enter into it practically as it is used?

A. Aniline is used, I think, in the manufacture partly.

Q. Do you know phosphine?

A. Yes; I know phosphine.

Q. Is that an aniline?

A. Phosphine is made from aniline residues; from the residue of the manufacture of fuchsine—nobody knows what it is.

Q. Is it regarded as an aniline?

A. It has been sold under that name.

Q. In trade?

A. In trade; yes, sir.

Q. Did you say it is or is not an aniline?

A. I would say neither; I would simply say that it is one of the residues which is produced in the manufacture of aniline colors. Whether it has a composition or a character precisely corresponding to the anilines or not, I do not know. It is a poor color and I never cared much about it.

Q. Did you say you did or did not know whether there was an amido-azo-benzole yellow?

A. I can't say that I know it precisely.

Q. Do you know an aniline yellow?

A. Aniline yellow I know——

Q. A color called aniline yellow?

A. I know of no true aniline yellow.

Q. Do you know of any called in trade aniline yellow?

164 A. All these things are sometimes called in trade aniline colors.

Q. I asked you if you know of any color in trade called aniline yellow?

A. I know that there is a color called aniline yellow in trade sometimes, but what that color is I don't know.

Q. In 1870?

A. What that color is I don't know.

Q. And was prior to 1870?

A. That was prior to 1870; yes.

Q. That you don't regard as a true aniline?

A. I can't say; I think not; I don't know of any true aniline yellow.

Q. Do you know aniline scarlet?

A. No; there is no aniline scarlet.

Q. Wasn't there anything known in trade as aniline scarlet?

A. Not that I am aware of.

Q. Do you know acid magenta?

A. Yes; I do.

Q. Is that an aniline?

A. Yes; an aniline.

Q. Does that require an acid in dyeing or not?

A. It doesn't require an acid; an acid may be used with it; it is an acid color.

Q. It usually is practically used with an acid in dyeing; you make a bath?

A. You make a bath.

Q. You may tell, speaking as a chemist?

A. There generally is some acid added.

Q. Nicholson's blues are generally used, are they not, with an acid?

A. They are not; not that I am aware of.

Q. What is the extent of your knowledge on that subject?

A. I am not familiar with the practical operations of the dyehouse with regard to Nicholson's blue personally; I know from reading.

165 Q. You say that they are not. You know that from reading in your books?

A. Yes; and——

Q. Do you know whether the water blues are usually and practically used with an acid?

A. The water blues, as I understand them, are Nicholson blues.

Q. Aren't there different blues from Nicholson's blues known as water blues?

A. There is a slight difference in the mode of manufacture, I presume; I am not familiar with it; blue colors are those that I have not had occasion to use to any extent.

Q. Acid green, too; is that usual, or don't you know?

A. Acid green I am not familiar with.

Q. You said yesterday that aniline may always be put on cotton by tannin or tin oxyde or antimony oxyde, except what anilines cannot?

A. I couldn't tell without trying most of them. I don't mean to say that I mean by that that I won't say that there is some that cannot.

Q. You don't know whether they all can or not?

A. I don't know; I never tried all of them; I speak of things as classes.

Q. How many of them have you personally tried?

A. I can't say; I have directed others to try them—to test them—and have seen them used—the greens particularly.

Q. Those you have tried?

A. Yes; the iodine green.

Q. And from the result of that you have referred [inferred] generally that that is a characteristic distinction between aniline dyes and others?

A. No; it is not from my own experience; it is from conversation with others who have used these things and from a knowledge derived as an expert derives his knowledge—oftentimes from books and from conversations with dyers; the material which I
166 have used for fixing the colors myself is albumen; it is generally used in printing.

Q. On calico?

A. It is what I have generally used in fixing the aniline colors on cotton—that is, albumen; and I have used tons of albumen.

Q. When did you begin to use it for that purpose?

A. In 1861.

Q. It has been used since that time?

A. Yes.

Q. Now, are all aniline colors printed on cotton?

A. They are not.

Q. Why?

A. There is no call for them. We print what the market calls for; partly for that and partly because some of them cannot be easily applied in that way. Nicholson's blue is not suitable for application in that way; Nicholson blue is not suitable for printing.

Q. Is Nicholson's blue used on cotton?

A. Not that I am aware of.

Q. Could you fix it to cotton?

A. I can't say; I think not.

Q. Could you fix any acid aniline to cotton?

A. I think not.

Q. It is by reason of its acid character that you can't fix the azo colors there?

A. Probably it is that.

Q. Then that is not a differentia in itself of the anilines from other dyes, is it?

A. Not of itself; no.

Q. Is it because of their acid character that you can't state?

A. I can't say that.

Q. The two things go together?

A. There may be certain facts; I can't say; probably that may be it, but I can't say for certain.

Q. I think you said yesterday that the aniline colors were fugitive?

A. Yes.

167 Q. While the azo colors were fast? In making that statement I suppose you restricted yourself to the very limited class of what you call true anilines? Do you mean to say that prior to 1870 there were no fast anilines?

A. Yes; I do.

Q. That is what you referred to as fast anilines?

A. Yes; those that will bear exposure to light. There were no colors prior to 1870 which would bear exposure to light.

Q. No colors?

A. No aniline dye-stuffs.

Q. How about Nicholson's blue?

A. That won't stand exposure to light.

Q. How do you know?

A. I know by the general reputation of it.

Q. Did you ever try it?

A. I have never tried it. Such an experiment requires a long time.

Q. How long?

A. I should want to expose anything of that sort for two or three months to make sure of it. It might not need two days, it might need two months, or it might need a longer time.

Q. If it stood it three months would you say it was a fast color?

A. I should not say it was fast if it did not stand a year.

Q. If it did stand for a year would you say it was fast?

A. Yes, sir.

Q. Have you tested any color for a year or a sufficiently long time to satisfy you that it was fast?

A. No; I have not myself.

Q. Then you don't know that Nicholson's blue was not fast?

A. Yes; I do know by the general reputation of the article.

168 If one were obliged to try everything by one's self you would never know anything. These experiments involv*ing* a great deal of time and a great deal of labor.

Q. Now, isn't it true that with regard to all acid coal-tar dyes they are relatively fast? I suppose fastness is not an absolute term. It is a term of degree anyway.

A. I will not say all by any means. Rosolic acid is an acid color, but it is not fast. Aurine, as it is called sometimes, it is by no means a fast color.

Q. What do you mean by saying a dye is fast? You don't mean that you can't fade it, do you?

A. No; I don't mean that you can't fade it. Of course, it is a relative term. These aniline colors will fade out in a short time, in the course of a month or two, when exposed to light.

Q. That you are willing to say now? It is a clear mark of dis-

tinction between the anilines—a clear characteristic mark of anilines known prior to 1870—that they would fade out in a month?

A. Yes.

Q. All of them that you call anilines?

A. All of them that I call anilines.

Q. In a month or two?

A. Yes. Of course, you are to understand that that is on exposure to light; not in the dark, of course. It must be exposed to light.

Q. Are all of the azo dyes equally fast?

A. I think not.

Q. They vary in degree?

A. Yes; I should suppose so.

Q. The aniline dyes vary in degree of fastness?

A. Yes; they vary in degree.

Q. Now, which do you consider the most fast among the anilines?

A. Well, the fastest that I have known of is the Perkins
169 purple, which is now out of date. It was used from 1860 to 1866 a great deal, but it is now out of date.

Q. How fast was that?

A. It was not fast, but it was faster than rosaniline—aniline red.

Q. Faster than Nicholson's blue?

A. Nicholson blue? I can't say about the relative fastness of that—that is, as related to the other aniline dyes.

Q. Mention the most fugitive of the azo colors.

A. The azo colors have been known, most of them, so short a time that I can't say about that; I have been concerned more particularly with those that are now in question; these are fast.

Q. How is it known that the azo dyes are fast?

A. By trial.

Q. Trial for a month or two?

A. No; not by trial for a month or two; they will stand exposure for a much longer time; I have had reports from those who have tried them; the general testimony is that they are fast.

Q. What is the most fugitive of those that you have known?

A. I can give no scale of comparison.

Q. There are degrees of fastness, are there not?

A. Undoubtedly.

Q. In that respect they resemble the anilines?

A. In that respect they resemble all dye-stuffs without exception; there is a great deal of difference in the fastness, natural and artificial.

Q. Have you yourself ever actually made any experiment?

A. Of the fastness of these colors?

Q. Yes.

A. I have not.

Q. Are the sulpho-conjugated dyes more or less fast than
170 those which are not so treated?

A. They are not always fast; for instance, sulpho-indigotic acid is not a color; that is a sulpho-conjugated substance, but it is not fast.

Q. Would you say that as a class the sulpho-conjugated colors or dyes are more fast than those which are not so treated?

A. I should not make any such distinction as that.

Q. Why, if it is true?

A. I don't know that sulpho-conjugation has anything specially to do with it, and I do know that when we sulpho-conjugate——

Q. Whether it has anything to do with it or not, is it a fact that all the sulpho-conjugated dyes or colors are more fast than those which are not so treated?

A. Not all of them. As I have said, sulpho-indigotic acid is.

Q. I ask you as a rule?

A. As a rule, with regard to those that are at present known, I should say that the majority of them were more fast.

Q. Can you say whether or not any mordant has yet been found by which all aniline dyes, or any aniline dyes, may be applied to cotton?

A. There is none except the Turkey red mordant that I am aware of.

Q. Will that apply all of them to cotton?

A. I can't say that it does, but it does most of them; I can't say with respect to all; all is a very comprehensive term, and we don't know everything, and I don't know everything, certainly, and I don't think anybody else does.

Q. You can't say, then, that there is any mordant under whose influence all the anilines may be applied to cotton?

A. I cannot; neither can anybody else.

Q. You can't say that there is any mordant under whose
171 influence azo dyes may be applied?

A. I cannot.

Q. When was Turkey red discovered as applied for this purpose? When was it first used?

A. It was used when aniline colors first came into use.

Q. It is an old mordant?

A. It is an old mordant. Albumen is also an old mordant, and tannate of tin and tannate of antimony are old mordants.

Q. (Handing the witness Exhibit No. 2.) Resorcine red J; what is the composition of that?

A. The composition of eosine in general is—it is tetra-brom-flurescent; it is an azo compound made from resorcine and phtalic anhydrate.

Q. What does resorcine come from, practically?

A. Resorcine comes from benzole, practically. It may be made also from the gum residues, without any reference to coal-tar. It may be made from assafœtida, and galvanum, and various other things. It comes directly, as now made, from disulpho-benzole.

Q. What do you combine with benzole to make resorcine?

A. Sulphuric acid.

Q. To make aniline you combine with benzole nitric acid?

A. You combine $N O_2$, six elements of nitric acid.

Q. You make nitro-benzole?

A. Yes; make nitro-benzole.

Q. Taking sulphuric acid and benzole you get sulpho-benzole?
A. Sulpho-benzole.
Q. Then you treat that with iron filings and acetic acid?
A. Yes; to make anisidine.
Q. What is the next step in the process?
A. I can't give you the next step. It is defined in the patents, but I can't remember the terms of the patents precisely; but it goes through certain operations by which we get anididine.

172 Q. You understand resorcine red to be an azo color?
A. I do.
Q. Why do you say it is an azo color?
A. That is my impression from the study of it; that is all. I should more properly call it—instead of classifying it with the azo colors, I should call it a naphthaline color. A most important constituent of it is phtalic acid, which is derived from naphthaline.
Q. We are getting a good many classifications of colors here. You think it is an azo color, and in giving your answers you have grouped it among the other azo colors.
A. That is my impression—that it is an azo color.
Q. That is, that it is a diazo?
A. Yes, sir; I think——
Q. Are you positive about that?
A. I am not absolutely certain; I couldn't tell.
Q. You have classified that on your direct examination as an azo color, haven't you?
A. Yes, sir.
Q. Your answers were based upon it on the assumption that it was an azo color?
A. Yes, sir.
Q. Can't you refresh yourself to find out what it is now?
A. I have no books by which I could refresh my mind.

By defendant's counsel:

Q. About when was it that the production of dyes and colors from coal-tar was introduced, practically?
A. It began in 1856. The discovery was made in 1856, and the application began soon after on a moderate scale. They came into general use in four or five years.
Q. When did rosolic acid become an article of commerce?

173 A. Rosolic acid, as far as I know, was not known as an article of commerce until 1861, but I can't give you the precise date.

Q. And how was picric acid produced before it was produced from coal-tar?
A. It was produced originally by the action of nitric acid on various organic substances; on silk and so on.
Q. Gummy substances?
A. Gums; those that contain nitrogen—animal substances particularly.
Q. When did the practice first arise of producing picric acid from coal-tar?

A. That was in 1835. I think it was a good while ago.

Q. You mean as an article of commerce?

A. As an article of commerce. It came into use between 1850 and 1860—into general use.

Q. Was it produced from coal-tar at that time?

A. It was between 1850 and 1860; yes. It was known over a hundred years ago.

Q. Both rosolic acid and picric acid were well-known articles of trade long before the great discovery of the use of coal-tar?

A. No; rosolic acid was not. Rosolic acid was known, but it was not an article of commerce until long after the discovery of aniline colors, and the preparation of rosaniline and rosolic acid.

Q. Picric acid was?

A. Picric acid was; it was used long before.

Q. What were the uses of rosolic acid?

A. It has been used for dyeing wool, but it is poisonous, and it is no longer in use.

Q. It has not been for a great while, that you know of, used for dyeing?

174 A. Not properly. They may use it a little—coralline. It has been known under the name of coralline and aurine.

Q. What was it practically used for?

A. Rosolic acid?

Q. Yes.

A. Rosolic acid has been used sometimes for a test in testing, by chemists testing acids and alkalies.

Q. What was its commercial use?

A. It had no commercial use until it began to be used as a dyestuff under the name of aurine and coralline, and it was soon after found out that it was poisonous, and the use of it was discontinued.

Q. Is that true rosolic acid?

A. That is rosolic acid; yes.

Q. Pure and simple?

A. Well, there are different modifications of rosolic acid, of course. We can't nowadays distinguish any one thing as pure and simple, because the atoms in almost all the bodies are capable of replacement by other bodies, and we can modify them in many ways.

Q. Rosolic acid, as it was known in commerce, was very fugitive?

A. Rosolic acid as first known was very fugitive. It was known in the liquid condition, but not known in the solid condition.

Q. What has been the principal use of rosolic acid itself; has it not been for printing?

A. Rosolic acid itself has been used only in dyeing that I know of.

Q. To what extent?

A. Very moderately. The color is not a very desirable one, and it is poisonous in its character, so that it is unsafe to use it.

Q. When was that discovered?

A. That poisonous character was discovered, I think, somewhere about 1870. I can't give you the precise date. It was found

175 at that time that articles dyed with rosolic acid affected the skin.

Q. Dyed with what?
A. With rosalic acid, or aurine, or coralline.

Redirect by plaintiffs' counsel:

Q. Would you call a substance prepared from phtalic acid and treated with resorcine and then with bromine, resulting in a combination of bromine, resorcine, and phtalic acid, one of the azo dyes?
A. That would not necessarily be an azo color; I may be mistaken in calling it an azo color.
Q. From your chemical studies you know what would result from the combination of bromine, resorcine, and phtalic acid?
A. I should not know beforehand.
Q. From your studies, do you know what does result?
A. I do know now what does result; the result is eosine.
Q. You were asked in regard to the amidogen being a characteristic of the aniline dyes, as to its existence in one of the forms of oranges here. What is the characteristic element of the azo dyes? You say it is not amidogen.
A. Azo dyes are characterized by two atoms of nitrogen in the place of what we find in the aniline dyes as one atom of nitrogen or two atoms of nitrogen and four atoms of hydrogen—that is, the hydrogen is entirely eliminated, and the atoms, or the molecules, rather, are bound together through the atoms of nitrogen, according to our present ideas.
Q. That is the distinguishing necessary characteristic of azo colors?
A. It is. Aniline colors are bound together through the carbon atoms; azo colors are bound together through the nitrogen atoms.
176 Q. And how is it as a fact that when the nitrogen elements are absent from one of these coal-tar dyes you do not get the scarlets and orange colors?
A. We know for a fact that when we had the amidogen present these things shade on blue, and when the hydrogen is eliminated they shade on yellow, but why it should be so no one can tell.
Q. Did you know that to be the fact?
A. That is the fact. Hydrogen seems to give instability. When the hydrogen is eliminated we have the azo colors; we have greater stability.

Recross by defendant's counsel:

Q. Does aniline yellow shade on blue?
A. No. I don't know of any true aniline yellow at all. What we call aniline yellow, I believe, does not shade on blue?

By defendant's counsel:

Q. Did you hear Professor Chandler say yesterday that there was an aniline yellow that he could scarcely distinguish from one of the plaintiffs' oranges?
A. I did not hear all his testimony.

Q. Did you hear that?

A. I did not.

Q. It is in the testimony. He said he had lately heard of a yellow shade that may closely resemble it. If that is so, is he mistaken if he said so?

A. The lemon shade?

Q. No; the aniline yellow.

A. I don't know any aniline yellow.

Q. He took the lightest color in it and said he would not be sure, but that it would make such a color that he couldn't distinguish it.

A. You were talking about blues, as I understand.

177 Q. I was talking about aniline yellows.

A. I don't know of any aniline yellow or blues.

Q. Do you know what Professor Chandler says—that that was a yellow dye, so nearly like it that he could scarcely tell them apart?

A. I don't remember that.

Q. You don't remember that?

A. I don't remember that; there is nothing that shades on blue in any yellow.

By defendant's counsel:

Q. I read from page 37 of the stenographer's notes of Professor Chandler's testimony:

"Q. I will put my question in this form: whether colors identical with those" (the witness having Exhibit 3 in his hands), "whether colors identical with those can be produced or are produced by aniline dyes; whether there is any single way to make one at a time which can be produced by an aniline dye. Take that lightest yellow, for instance; do you know of any aniline dye which will produce that color?

"A. Aniline yellow produces a color very much like that, but not exactly the same shade.

"Q. Is aniline yellow an aniline dye?

"A. Yes; an aniline yellow."

Do you consider that testimony as erroneous?

A. I should not question Professor Chandler's statement to that effect. I know of no aniline yellow. I don't say that he is wrong, but I know of none.

Professor HENRY MORTON, being duly sworn and examined as a witness for the plaintiff, testifies:

178 I am president of the Stevens Institute of Technology, in Hoboken, and have occupied that position since 1870; prior to that time I was professor of chemistry in the University of Pennsylvania, in Philadelphia, for several years. I commenced my chemical studies when I was a boy. I had a laboratory in my father's house; have continued them ever since. When I was professor in the University of Pennsylvania I lectured, among other things, on dye-stuffs, and made myself familiar for that purpose with

the aniline colors known at that time. Very shortly after coming on here I was called upon in reference to a suit on copiable printing inks, to make an examination of a number of these inks which were colored with aniline dyes, and that led me to look up the subject of aniline dyes still more extensively; then, in 1873, in the examination of some products of the distillation of petroleum, I discovered a new substance very much resembling anthracene, and in the investigation of that I was led to go into all related bodies, the products of coal-tar, so as to familiarize myself with them and find out exactly what this new substance was, and since then I have been constantly called upon in connection with patent suits on these various new dye-stuffs as fast as they came out. Having given a good deal of attention to that matter, they are apt to come to me for information on the subject, and as soon as a new dye comes out I generally have early notice of it and manufacture it on a small scale in my laboratory, and I know just how it is made and am able to compare it with bodies found in commerce, and know what they are.

179 Q. You were familiar with the aniline dyes of commerce or the aniline dyes in this country in the years 1870 and 1874?

A. I was.

Q. State what aniline dyes there were and how they were made.

A. In the first place, I should say that the aniline dyes all start with aniline; they are dye-stuffs produced from the substances known as aniline, which is, as has already been frequently stated here, produced from benzole, which is one of the products of coal-tar; it is called benzole here; in foreign books it is generally called benzine; it is the same substance, however, by whichever name called; that is converted first into nitro-benzole and then into aniline by treatment with acetic acid and iron for the last step, and that material is used in the manufacture of aniline colors; there are a great many of them, a considerable number of them; and as it would take very long, I don't suppose you mean that I shall describe all the processes used to make them all. The principal colors, as I understand them, are, in the first place, rosaniline, which is what we may consider the base of all of them, and then there are various violets and blues and greens, Hoffman's violets, and the various aniline blues and the aniline greens. These colors, in a chemical point of view, have a common constitution or structure, just as we may say—(I will use a mechanical illustration)—just as we may say that certain machines have a structure which we would describe by saying that they are operated by gearing—that is, certain combinations of toothed wheels which constitute gearing structures. Other structures are arranged and act by certain

180 combinations of cams. We may have a great many varieties of cam machines and a great many varieties of gearing machines; but on examination, if we find that the one contains and is made up of cams, we regard it as a cam structure or machine; if it is made up of gearing we regard it as a gearing machine. Now, in the same sense, those chemical substances are capable of being

not taken apart like a machine, but smashed or broken to pieces. We cannot take a chemical substance as we can a machine, and unscrew this part and the other and lay them carefully out. We are not able to attack the atoms in that way, but we must take it and break it and use what is relatively a rougher process, but which does not destroy it, does not reduce it to the simple materials of which it is formed, but breaks it into its component parts. When it does this we find that, as in the illustration of a cam machine, we break it into a lot of cams; if it is a gearing machine we break it into a lot of gear wheels. The same is true with chemical substances. If it is true aniline compound it breaks up into what I shall presently describe to you as the aniline color nucleus. If it were an azo compound it would break up so as to show us the azo nucleus. When that is done we have a means of recognizing positively, as chemists, whether a substance is properly an aniline or an azo, or if it were a phthaline-amine, a phenol, or one of those other classes of colors. Now, there is a name which I think completely describes the true aniline nucleus; it is rather a long name, and to one unaccustomed to chemistry it may sound strange, but to a chemist it exactly expresses the condition of things. This nucleus or common element of all true
181 aniline colors may be described as amido-triphenyl methane—that is to say, amido means that which has amidogen or the base of ammonia—the radical of ammonia—in it; triphenyl means that the thing has the phenyl group or ring of six carbon atoms, meaning together that three groups of atoms belong in it; saying that it is methane means that it starts with the methyl, the marsh-gas element, which is one atom of carbon with four of hydrogen around it. But three of these hydrogen atoms are replaced by three of these phenyl rings, which are stuck on in place of the three of hydrogen, leaving carbon and one hydrogen, and then these phenyls, each of them, have amidogen or an ammonia radical stuck onto it again. Then more or less may be added to those. We may add methyl and ethyl and more phenyls to this same thing, but as long as that nucleus, as long as that spur-wheel, as I may call it, that piece of gearing, remains in it, it is an aniline color, and when that goes out of it it is no longer an aniline color, as I understand it as an aniline. Now, this idea has developed with the growth of our knowledge on this subject. When the aniline colors were first discovered no one knew what their composition or their constitution in this sense was, or they had indefinite ideas. Gradually chemists have examined them. This process of breaking and examination is a difficult one, as you may imagine, and it has only been gradually and slowly that chemists have found out the constitution of these different bodies, and there are some of these color stuffs that we do not to-day know as to their exact constitution, but when we do find out the constitution then we can absolutely say what
182 these are and to which class they belong. But even at an early period—as early as 1870 or thereabouts—it was realized that the original rosaniline and the violets and blue which had been made from it were a proper class and had close relations with each

other, and this, I think, appears from the literature on this subject. If we refer to chemical literature and if we take the books of that date—of 1870 or thereabouts—and then go on to 1874 and later we will find that these ideas gradually get clearer and clearer, and that the writer of these books confines the anilines to the bodies which have this nucleus that I have described as having been recognized as being in it, and that they sometimes name in the same category bodies that they didn't know about merely because they had to put them down somewheres, and not knowing what their real structure was they left them where they had happened to fall when first thrown into the world by their discoverers; but as more and more knowledge was reached on this subject the classification became more and more precise, and so we reach—not by any sudden jump, but by a gradual progression—this idea, which is what I have been trying to develop. I think that, if you will allow me, a little diagram which I have prepared on this card will show exactly what I mean clearly to the eye; I have there represented the methene nucleus, in the centre a carbon atom, in the centre the three phenyl rings of those carbon atoms arranged each around it, each phenyl ring having amidogen or the ammonia radical attached to it. There is, besides, in this particular one, one atom of hydroxyl, of oxygen and hydrogen, and one added atom of methyl, because I
183 wanted to represent an actual familiar body. This is the well-known rosaniline (known as rosaniline), which is manufactured and sold — largely used. This is the chemical idea of that substance, and, as I understand it, all colors properly called aniline colors are colors which contain this.

(The diagram referred to by the witness is offered in evidence and marked for identification Plaintiffs' Exhibit No. 6.)

C here represents carbon, H hydrogen, N nitrogen, and O oxygen. This diagram represents the chemical constitution of rosaniline. I don't know that I can fix upon any one fragment of it and call that the distinguishing feature; it is that entire group which is the basis of all these colors. The moment we take away any part of that group it ceases to be an aniline color. By the grouping I mean everything that is in it—that is to say, we can make a variation by adding something to it, but we can't take anything away except hydrogen. When we add in chemistry we never can add, or very rarely can positively add, one thing to another; in these compounds you must always take something away to let the new body hook on. Now these hydrogens are very convenient for that purpose. The hydrogen atoms are amiable, and they will step out generally on first intimation and give their places to somebody else who comes along. That we vary the aniline by a process of the substitution of the hydrogen for something else is substantially the case. I was about to say that besides this, which is, of course, a strictly chemical characteristic and distinction of aniline colors, there are a number of physical, and also in a certain sense chemical, distinctions,
184 such as their behaviour in connection with dyeing and their colors and the like, by which we are able to recognize them;

but to start I should say this: That, as in all cases of natural bodies and their classification, it is impossible to make such classification or distinctions that there shall be nothing in a body which is doubtful as to its classification, or that there shall never be some intermediate link. If we desire even to classify between animal and vegetable products, we know—every one knows—perfectly well that there are bodies which are in dispute, and that some people say belong to the class of animals and some people say belong to the class of vegetables. We can't make a distinction which will absolutely set all of one class on one side and all of another class on the other side, simply because nature don't work in that way. Nature works by gradual progressions, from one end to the other, by the method of creation or development, making things gradually varying, and when we come to draw a line that line must cut between some things that are close together. Premising this, I should say that I consider the distinctive properties of aniline colors, in the first place, to be these: That the aniline colors have a very high tinctorial power compared, not only with the ordinary dye-stuffs of natural origin, but with azo colors, too. Azo colors have high tinctorial value, but it is no higher, and, perhaps, not so high as some of the natural dye-stuffs. The carmine extracted from cochineal and safflower, and even logwood and purpurine—many of the natural dye-stuffs—have, I think, when they are pure, as high a power as the azo colors, but they have not such a coloring power as the aniline colors
185 properly so called, as a rule. In the next place these aniline colors all attach themselves to animal fibers or animal structures of all sorts with extreme readiness and directly. I have had occasion to notice that in this familiar way: These are aniline colors; aniline colors attach themselves to all sorts of animal materials—not only to wool and silk, but to horn, ivory, to bone, to any animal structure, to the skin; and that reminds me now of a familiar illustration of this thing that has come to me very frequently. Working with these colors, I naturally often get them spilled on my hands. If it is an aniline color I am working with there is no help for it. I must either use a strong agent or spend a long time before the color is removed. If they are azo colors simply a fair washing with ordinary hand soap washes the color off, and, as a practical thing of every-day experience, I noticed in that way that difference, which the dyers always, I think, observed, as I have been told by them. The aniline colors then attach themselves without any manipulation easily and directly; as soon as you can bring them in solution—in contact with animal fiber of any sort—they combine with it readily. The azo colors, on the other hand, while they will combine, do so with more difficulty, and are greatly assisted by the addition of mordants and by the addition of acids, tannin or tin salt, antimony, and other mordants of that description. In the next place, as a rule, aniline colors are wanting in fastness. There is a difference in the fastness of the aniline colors among those it is true, but I think it is almost common knowledge—it is com-
186 mon knowledge certainly among the fair sex—that the aniline colors are very unreliable. When they first came out

their great beauty attracted great attention, and every one was delighted with the fabrics colored with them, but when parasols of these beautiful colors were held out in the sun they faded, and the ribbons that went out to walk in the summer day of a bright color came in looking very seedy, and the color was discredited through that very property. As compared with those, we know that the azo colors restored that credit, and that if they were called aniline they would be welcomed by those who bought them as aniline colors of a very much improved sort for any practical use. Admitting with this that some of them are not as strong as others, taken as a whole, this is a characteristic distinction, as I understand. In the next place, connected with this, I should say that the character of the colors also decidedly differ, for these aniline colors, properly so considered—the colors are, as a rule, with almost absolute exclusiveness, on the blue side, as we may say—that is, they have, according to the general popular theory, blue in them—that is, they are either blues or violets, or they are reds, which contain blue, or they are greens. The orange and yellow shades are not present in anything that is properly an aniline color—that has the constitution or is known to have the constitution that I have described. On the other hand, the azo colors have exactly the shades that the aniline colors want. As a necessary consequence of this, it happens, as is manifest, that the azo colors have not replaced the aniline. If one wants a color
187 which aniline gives, you can't get it from the azo colors, and, *vice versa*, the azo colors can't be supplied by anilines. If the dyer was restricted to the use of one or the other he would have to "cut his coat according to his cloth," or he would have to dye his cloth according to his colors; he couldn't make his coat with such cloth as he wanted, but he would have to die with such colors as he had the materials for. Again, in baths, if the aniline colors are in their natural condition, they are readily attacked by acids or alkalies. If you dye a material with aniline and then expose it to acid or aniline bath it is changed, faded, or injured; whereas these azo colors, after dyeing therewith, you may put them in a pretty strong acid or alkali, and yet there will be little or no effect at all, or there may be even an improvement, a brightening and clearing. Then connected with this same thing is the combination of albumen. I think—my own knowledge is—that the aniline colors combine readily with albumen. When those colors first came out they were largely used for coloring photographs. The photograph was generally printed on a paper coated with albumen, and that was the way of getting the photograph colored, because albumen combined so readily with aniline colors; so that if you took such a photograph you could paint on it your aniline colors, which were transparent, and therefore did not injure the photograph, and without any great artistic skill colored pictures could be made, and great quantities were made; but they soon lost popularity because they faded, but the power was there. This power does not exist with the azo
188 colors, and this power is an important one to the dyer, for albumen is one of the familiar mordants, and was a mordant which was largely used with the aniline colors, but which was not

available with the azos. These, as far as I recollect at the present moment, are the distinguishing characteristics, chemical and physical, as I understand it, of the anilines, and incidentally of the azo colors.

Q. What is an azo color?

A. An azo color is, in a chemical sense, a color which consists of these phenyl rings united by two atoms of nitrogen, which are themselves united together. Now, to illustrate that, I have a little chart here, also representing the naphthylamine red.

(The chart referred to is put in evidence and marked "Plaintiffs, Exhibit No. 7.")

On this card I have drawn, on the same principles as in the others, the chemical grouping to represent the naphthylamine red or naphthaline red—that is, two groups of naphthyl—that is to say, the radical of naphthaline. Naphthaline is a body related to benzine or benzole, benzole being chemically viewed as a ring of six carbon atoms united together. The naphthaline is such a ring with another ring welded into it—not two complete rings, but two of the carbon atoms are common to each ring; so that we have what you might say was a figure of 8, in which there was two common carbon atoms, and which have four outside ones in each ring. Now, that is naphthaline when it has hydrogen stuck on each projecting angle; two of those united by two atoms of nitrogen, which are united
189 to each other, and which we know—that is, it is known among chemists—as the diazo or azo link and which constitute, as I understand it, an azo color; and these azo colors are all of them made by a special treatment, by which this nitrogen is introduced in that shape, in that form or combination, for we might have nitrogen introduced in a body, as in making a nitrate or nitro compound where the nitrogen was not in this shape or form of combination—that is, two atoms linked to each other and serving as a means of union to other groups. I have already given the characteristics of the azo colors in speaking of the anilines.

Q. Benzine or benzole and aniline and naphthaline and naphthylamine are derived from coal-tar, ordinarily?

A. The benzole and naphthaline are found in coal-tar.

Q. These exist in coal-tar?

A. They exist in quantity; from the benzine the aniline is manufactured, and from the naphthaline the naphthylamine is manufactured.

Q. Now, there are other bodies found existing in coal-tar aside from the benzine or the benzole and the naphthaline?

A. Yes.

Q. Name some of them.

A. There are an immense number of them. But the ones that I think you would refer to are——

Q. They are the benzole bodies?

A. The ones that I think you would refer to are the carbolic acid, which is the type of the phenols, and then there are derivatives of benzole, toluol, xylol, chymol, cumol, and some others.

Q. Phthalic acid is not found existing in coal-tar?

A. No; that is manufactured from naphthaline.

Q. And the others; are there other phtalic acids than those you have mentioned manufactured?

A. Yes.

190 Q. What is the general process of manufacture of those?

A. The most important are the class of colors known as eosine, because eosine refers to several bodies which all go by the name of eosine, although they are slightly different from each other. Eosine is made by combining phthalic acid with resorcine. Resorcine may be regarded as a derivative of benzole, very closely allied to carbolic acid. Carbolic acid is benzole in which one atom of hydrogen has been replaced by an atom of the base of water, which is called hydroxyl (O H); one atom of hydrogen is replaced by O H in benzole, thereby making carbolic acid; when two atoms are replaced we have resorcine. Resorcine and phthalic acid (or rather phthalic anhydride—that is, phthalic acid deprived of a portion of water) when heated together they form a molecule known as fluorescene; and when it is combined with bromine or with iodine, or with bromine or iodine and some nitric acid it forms a variety of eosine. Some of the eosines in the market are made with bromine and some with iodine; they differ a little in shade, and some have nitric acid in. They differ a little in shade, but otherwise they are not distinguished.

Q. Those are neither aniline nor azo colors?

A. Neither. They contain no nitrogen, and of course that would prevent them from being azo colors, and also in a sense aniline colors, for if they contain no nitrogen they manifestly don't contain amidogen, and they really have no relation to either of these classes. In their construction, I should say that they were closely related to rosolic acid; in structure they are very much like rosolic acid.

191 I have a card, or two cards, here; one shows the two substances, phthalic-anhydride and resorcine, pictured in this same way, from which it is manifest on inspection.

(The first of the cards produced by the witness is marked Plaintiffs' Exhibit No. 8.)

A. (continued). And the other card is eosine.

(The second of the cards is marked Plaintiffs' Exhibit No. 9.)

A. (continued). The first card manifestly shows that the bodies are not related to aniline color, and the other card shows that the eosine is a product of the same with the diazo link that united them, because when united the two groups of resorcine and the phthalic acid make this body, and then you introduce the bromine or the iodine. I have represented bromine on one of these cards by the letters Br.

This first card, No. 8, contains a representation, chemically, of the phthalic acid-anhydride, also resorcine, and the second card shows how they are combined chemically to form eosine. In the representation of the eosine (card No. 9) I have not introduced the alkali.

As generally sold, soda or potash is added to this for convenience, as it is generally sold, but it is not chemically affected by it. The color would be same with or without it.

Q. The dyes and colors in question are represented by the samples described as naphthylamine red, orange II, orange IV, and resorcine red J. Are you familiar with those dyes under those names?

A. I am.

Q. What is your familiarity with those dyes and colors?

A. This naphthylamine red and the two oranges I became familiar with a few years ago when there was expected to be a patent litigation in reference to two parties, both claiming patents sup-
192 posed to cover those colors, and at that time I examined the colors and made them myself repeatedly and analyzed thoroughly, taking them from the market and making complete analyses of them, separating them into the constituents from which they had been formed. I have also recently received samples of all these colors, and, although I have not thoroughly analyzed them, have made such tests with those samples that I am quite certain that they are samples of the things which they represent.

I have not yet spoken of what is here called resorçine red or eosine. That I first became acquainted with many years ago, when it was first announced as a scientific discovery, because it either has itself or can readily be made to have very remarkable fluorescent properties. I have given a great deal of study to that subject and written many pages on the subject of fluorescence. I wrote the article in Johnson's Encyclopædia on the subject of fluorescence, and I have written for the foreign periodicals many papers on the subject. This subject of fluorescence had attracted my attention before there were any publication about it. Even before the material was sold on the market I had made some of it myself, and I have ever since been familiar with it. This particular specimen here is the iodine and not the bromine compound. That I ascertained myself by a test, warming some of it in a test-tube, and the iodine caused it to give off a beautiful purple color. The bromine compound fluoresces, but the iodine salt does not. In the case of the iodine compound we reduce with zinc amalgam, and adding an oxidizing agent (permanganate of potash) the fluorescence is brought out. The chemical name of that substance would be tetra-iodo-fluo-
rescence, existing, however, as a soda or potash salt, I
193 didn't stop to determine which. That sketch for the eosine would be correct for this by substituting I for Br. and also adding the base, either Na for sodium or K for potassium, whichever happened to be the base in it; it is a matter of indifference; I did not examine as to which particular base was there. These dyes and colors were all discovered within the last six or eight years, I think; but naphthylamine red, according to my memorandum, was first discovered or introduced in 1877. Eosine was first discovered, I think, as a mere chemical product in 1873, but it was not introduced into commerce in any way—not manufactured until, I think, late in 1874 or perhaps in 1875. I have no memorandum here

on the date of these orange products, but I think you have patents which would give the date really.

This Exhibit No. 4 referred to orange II and orange IV, and is dated 1878; Exhibit No. 5 is the patent for naphthylamine red, the original of which is 1878; this is the reissue. The naphthylamine red was discovered just prior to the issuing of the patent. I am familiar with both of these patents; and these three dyes, orange II and orange IV and naphthylamine red, are correctly described in these two patents as to the method of manufacture. I have made them several times myself and the result was identical with that which was found and known in commerce. The resorcine eosine is a color rather than a dye. The distinction between a dye and a color is this: a dye is something which directly combines with a fabric, or a mordant applied to a fabric, so as to remain permanently attached thereto, even if exposed to a moderate wash-
194 ing or wearing. A color is something which can't be so attached, but if applied in a similar way would only stain and readily wash off, and colors, therefore, are not generally used for dyeing, but rather for the manufacture of paints or pigments which are attached to objects by means of something which we may call a cement, like the oil in an oil painting or the gum in a water paint, which is applied on the surface; they don't combine with the texture of the material; sometimes some of these colors are used in painting, but they give a very poor variety of goods, which don't usually wash. These colors could be painted or printed on, but they don't hold. The resorcine is used very largely for manufacturing paints. You notice these on agricultural implements—plows, harrows, and so forth—which are painted of a striking red, which is produced by a mixture of cinnabar coloring matter with some of the lakes made from this resorcine; and it is used very largely for wall-papers; it is also used for coloring inks for lithographic printing and for pens. You can't get the same color with any anilines; and aniline cannot be used, as a rule, for paints; it is not impossible, because some paints are made with them, but they are very inferior; practically they are not employed for anything that is good, not as a rule. Resorcine, in the quality of color it produces, resembles the azo colors, though it has not the chemical structure of azo color; it does not resemble the aniline colors. The aniline colors are crimson, running up into violet; the eosine is on the scarlet; that is why I say it more resembles the azo colors.

195 Q. I don't remember whether in stating the points of resemblance and difference between the azo and aniline dyes you spoke of the acid character of either dye.

A. I think I did, but consider the aniline as substantially the basis or alkali material. The presence of these ammonia radicals—ammonia being, as I think you all know, a strong alkali—indicates that, in effect, so strong is that characteristic that if we haven't some acid in rosaniline it hasn't any color. To make a color we have got to give it some acid; in other words, the salts of rosaniline are the real colors. You must add some acid to it, and even then it is substantially an alkali. Then when they came to the blue col-

ors they were found to be insoluble in water, as first manufactured, and troublesome to dye with. They had to use alcohol as a medium to get them in solution to apply them to the cloths. It was found by combining them with sulphuric acid in a certain way, making what are known as sulpho-conjugated compounds, they became soluble in water, and therefore Nicholson blues and some few others have been made essentially with that view of making the colors soluble in water. But though that, of course, has an acid form I don't consider that its acidity is at all due to the aniline, but only because you have put sulphuric acid in it. As to the acid qualities of the others, I think the acid quality belongs to them. They don't have these abundant amidogen groups in them, and in many of them the sulphuric acid, which exists in some of them, I think, or the sulpho acid that exists in some of them, as a radical part
196 of their nature, of their original structure. As, for instance, we take sulphanylic acid, which is a body containing this sulpho acid, to begin with, when we make the color. We don't make the color first and then put in the sulpho acid afterwards, but take the sulphanylic acid first in making the color; so it is with the naphthionic product. (The theion is the Greek word for sulphur.) Sulphanylic means the sulpho-aniline product. The body, naphtha, is a phenol, and that has acid properties. It is not strictly an acid. In one of its forms, carbolic acid, it is universally known as an acid, and yet that is the very type of the phenols. The Nicholson blue is the same blue, the same aniline color, whether the acid is present or not. Of course it is not known by the same name, the discovery of Nicholson being to make this acid compound; but that particular combination producing the color would produce the same color whether the acid were present or not. You would merely have to apply it in an alcoholic solution, as I understand. The acid is an incident merely to enable the substance to be dyed in a solution to be made with water instead of a solution to be made with alcohol. This card represents aniline, the difference being simply the introduction in the aniline of amidogen. It is not present in the benzole. By taking out an atom of hydrogen and putting amidogen in its place we convert benzole into aniline. One of these H's is pulled off and N with an H on each side of it replaces it. This other card represents naphthaline, which I have already described as this double ring—two benzole rings welded together.

197 Q. Did you know coal-tar colors in 1874 that were neither aniline nor azo colors? Did you know any azo colors in 1874?

A. Yes.

Q. What were they?

A. A yellow and a brown. The yellow was known simply as amido-azo-benzole, and the brown as triamido-azo-benzole.

Q. When was the yellow discovered?

A. I have not here any record as to their discovery; but they are both mentioned in a book, a well-known standard work, published in 1874, where I became acquainted with them. The book is known

as "A Manual of Chemistry of the Carbon Compounds," by C. Schorlemmer.

Q. Were those commercially known at that time, or how was that? Were they simply known to the chemists as things which could be prepared or had been prepared?

A. In one sense those colors were simply known to the chemists, but it is possible that those two colors were known in the trade, and were obtained from the impurities. In what is called the fuchsine melt, when the rosaniline was produced, there were a quantity of impurities. The product of the rosaniline, I think, as obtained by the usual process, is not one-half what it should be. There is quite a lot of impurity, and in this there were two colors, the yellow and brown, which were articles of commerce, and which, I think, were very possibly identical, but which were not known to be identical with the yellow and brown above mentioned.

Q. Those are the Bismarck brown and aniline yellow?

A. Known as aniline yellow and Bismarck brown.

Q. The exact composition of that aniline yellow has not been determined?

A. It is not even to-day; but I think even then a doubt
198 existed, because, for instance, in this very book, while these two products are described in one place as such and such bodies and the names aniline yellow and aniline brown are attached to them, the aniline colors mentioned elsewhere contain no reference to those, but only to the products of the impurities found in the melt.

Q. What other coal-tar products were used as dyes, in addition to those you have named as aniline colors, in 1874 and prior to that time?

A. Picric acid and rosolic acid, which had been used as a dye, but was abandoned, as has been mentioned here to-day already. It was chiefly used for dyeing stockings. It was found that it produced an irritation on the skin, and that finally killed its use.

Q. Picric acid was used as a dye?

A. Picric acid was used as a dye.

Q. Anterior to the discovery of aniline?

A. Before this a long time. But rosolic acid I don't think was used as a dye until after aniline was discovered.

Q. Any others?

A. There were others analogous to picric acid formed from cresol, otherwise known as chrysilic acid, and I think some others; but I can't recall any at this moment.

By defendant's counsel:

Q. You mean as commercial articles or known commercially only?

A. I don't know from my own knowledge that the dye from cresol was used commercially; I only remember it in books.

By plaintiffs' counsel:

Q. Was this distinction that you state to exist between these differ-

ent coal-tar colors then made in 1874, so far as coal-tar colors were known?

The WITNESS: Before answering that question, I recall that
199 there were naphthaline colors, which were not in any sense aniline dyes, known at that time—colors made from naphthaline by treating with nitric acid, and from sulpho acid of naphthylamine by treating with nitric acid. Manchester yellow and Martius yellow.

Answer. It was. For instance, in the book from which I have just quoted, there is, at page 407, a heading "Aniline colors," under which those which I have mentioned and one or two others that I have overlooked are included. This is followed, on page 411, by the heading "Phenol colors," in which aurine, another name for rosolic acid, occurs; then fluorescene or resorcine. This also is a coloring matter, and so closely allied to eosine that eosine is obtained by adding bromine to it or iodine; of course, it is the same substance, but it is a parent. Phenol phthalein is in here, and several others, but it is not material. But this shows that we have two classes at least, the aniline colors and the phenol colors.

Q. And the azo colors have been discovered since that date?

A. The azos have been discovered since then—that is, they have been recognized since then. There really were azo colors existing at that date, but not fully recognized. I may say that there are other books published at about the same date showing the same thing.

The aniline dyes as a class are much greater in tinctorial power; they have greater intensity, so compared, than azo dyes; that has been my experience in preparing swatches for comparison, that a fraction of one per cent. of aniline color will give a very brilliant dye to the fabric, while the azo colors will require one per
200 cent. at least, or even two or three per cent., to get as good a result, the color being in every case pure. I doubt whether there are any natural colors stronger than some of the anilines, but there are some that come pretty close to them, and some of the natural dyes come quite up to the azo colors and, I think, some exceed the azo colors.

Cross-examined by defendant's counsel:

Q. You have, I suppose, never engaged actually in trade in any of these substances?

A. No.

Q. And you speak from the standards of a chemist?

A. I do.

Q. From the scientific standards?

A. I do.

Q. When you speak to the jury about aniline dyes and azo dyes you mean to be understood as having in your mind and referring to the substances which you classify as aniline dyes and as azo dyes?

A. The substances which I, as a chemist, understand to be as a matter of fact properly named so—azo or aniline.

Q. We have all been very much interested in your explanation, but I want to get at the business man's understanding of what an aniline dye is, and I think you may help us, being a chemist, as well as from the chemist's standards. This criterion by which you discriminate between what you call an aniline dye and what you call something else—that is, the presence of the amido-triphenyl-methane is, I suppose, the latest position reached by scientific investigation?

A. I think it is the position where scientific investigation lands us by supplying facts which that expresses.

201 Q. That is the position which science has reached in Hoboken and New York?

A. Yes, sir.

Q. It don't seem to have got to Boston yet, if we may judge by Professor Ordway.

A. I think Professor Ordway understands it also.

Q. How long is it since the full development of this theory, in the precise terms in which you have stated it, has been reached?

A. That I cannot say; it has been something which has gradually grown by insensible degrees. Every new investigation published in the chemical journals from month to month has carried it a step further, and just when we should say that it had developed to this particular point I cannot say.

Q. You don't think that the importers and merchants and dyers of the United States in 1870 had any acquaintance with amido-triphenyl-methane?

A. Yes, sir.

Q. And the average Congressman did not, did he?

A. I cannot answer for the Congressman; my acquaintance does not reach so far.

Q. This book you have referred to—the "Chemistry of Carbon Compounds," by Schorlemmer—is a scientific work, is it not?

A. It is.

Q. Recognized as such?

A. It is.

Q. It is not a popular work, but a scientific work?

A. A scientific work.

Q. Do you find in this work anywhere a development of the triphenyl-methane theory?

A. Not precisely at that point.

Q. This was in 1873?

A. But the general idea is in that, and has guided the classification there.

202 Q. That is, you can get it out now?

A. Yes; you can see that it is there, yet not quite crystallized.

Q. You have referred to the fact that in this book are mentioned aniline and phenol colors; did you ever know of any such thing being dealt in in trade as a phenol color, by name?

PLAINTIFFS' ATTORNEY: I object to that question.

(Objection overruled. Plaintiffs except.)

A. I don't know enough about the trade names at that time to to say whether it was or was not, from any knowledge of my own.

Q. This amido-azo benzine to which you have referred has been the subject of questions put to Prof. Chandler and to Prof. Ordway, and you have been here and listened to their testimony, have you not?

A. Yes.

Q. Do you remember that Prof. Chandler spoke of it as an aniline yellow?

A. Yes.

Q. You remember that he did so?

A. Yes.

Q. Is this statement in Schorlemmer's book regarding that particular dye correct? He says this color "is also produced by passing nitrogen trioxide into a warm solution of aniline, and reducing mono-nitro-azo-benzine with ammonia sulphide. Amido-azo-benzine crystallizes from alcohol in yellow needles, which sublime at a high temperature; it is found in commerce under the name of aniline yellow."

A. I think that that is probably correct.

Q. You have no doubt of that, have you?

A. No doubt about that.

Q. That you consider an azo color and not an aniline color?

A. I do, manifestly.

203 Q. Although it was known in commerce, and was down to 1873, when this book was published, as aniline yellow, and although it was produced by passing in the first instance nitrogen-trioxide into a warm solution of aniline?

A. Yes.

Q. Then you don't consider derivation from aniline as being a criterion by which you would distinguish a dye as an aniline dye?

A. Not by itself, certainly.

Q. So that you would say that the words "aniline dyes or colors" do not mean dyes or colors to manufacture which aniline is first used?

A. Not of necessity.

Q. And that the words "aniline dyes or colors" do not mean dyes or colors in which there is aniline, from your view?

A. They mean dyes——

Q. I don't ask you what they mean; I ask you whether those words mean dyes or colors in which there is the substance aniline.

A. That depends on what you call the substance aniline.

Q. Will you be good enough to tell the jury what aniline is?

A. Aniline—free aniline—is amido-benzole, of which I showed you a picture.

Q. Excuse me. That is what it is?

A. Yes; free.

Q. Of what is it composed?

A. Six atoms of carbon, five atoms of hydrogen directly con-

nected with that one atom of nitrogen, and two of hydrogen connected with it.

Q. Do you find that substance, that compound, in all of the dyes which you consider aniline dyes?

A. Substantially; that is, in order that it should combine with anything it must lose something; a hydrogen must be taken off in order that it should unite.

204 Q. Take a specimen of aniline as obtained from indigo or benzole; if you take a hydrogen off is it still aniline?

A. In one sense, no; no more than lead when combined with oxide of lead is lead; it has suffered a change.

Q. The two cases are parallel?

A. I understand them to be so. In that sense there is a difference.

Q. Then this identical thing known to chemists as aniline is not in certain dyes which contain [certain] chemists class as aniline dyes?

A. Not in its free state.

Q. Well, that identical thing isn't there?

A. That identical thing isn't there, in that sense.

Q. And that identical thing is used in the manufacture of dyes which chemists do not now class as aniline dyes?

A. Certainly, it is.

Q. The testimony which you have given regarding amido-azo-benzole, which you class as an azo dye and which Schorlemmer says is known in commerce under the name of aniline yellow, is true of the triamido-azo-benzine, which is known in commerce as an aniline brown?

A. It is true.

Q. Which you also class as an azo dye?

A. It is.

Q. Orange IV, one of the plaintiffs' samples—one of the articles in question in this suit—you call an azo dye, do you not?

A. I do.

Q. And that is manufactured by the use of aniline, among other things, is it not?

A. Yes.

Q. Aniline is used twice in its manufacture, is it not?

A. Yes.

Q. And that also has the amidogen, has it not?

A. That has amidogen in it.

205 Q. Then the presence of the amidogen is not the characteristic of an aniline dye?

A. Not alone.

Q. Then when Prof. Ordway stated the characteristic of aniline dyes as being the presence of the amidogen he was not strictly accurate, was he?

A. I did not understand him so to state it.

DEFENDANT'S COUNSEL: I so understood him.

Q. How do you classify Bismarck brown?

A. That is an azo color; it is the very one you have been speaking of, as I understand it.

Q. That contains the amidogen, you say?

A. Yes.

Q. That is the same thing as triamido-benzine—brown?

A. Precisely, so I understand.

Q. Do you know Manchester yellow?

A. Yes.

Q. How do you classify that?

A. That is a naphthaline color.

Q. You wouldn't call it an azo color?

A. No; it is a color derived from naphthaline; naphthaline is its central group, and has one atom of hydroxyl added to it, as it were, and two atoms of nitric acid, or nitryl, to be more strict.

Q. How long have you known that color?

A. Personally, only for a few years.

Q. Do you know how that was known in trade and commerce in 1870?

(The same objection, ruling, and exception.)

A. No; I don't know.

Q. Do you know saffranine?

A. I know of the body; yes.

Q. How is that produced?

A. By oxidizing toluidine.

Q. And toluidine is what Prof. Ordway calls one of the 206 anilines?

A. It is a homologue of aniline.

Q. What Prof. Chandler calls one homologue of aniline?

A. It is one of the homologues.

Q. Does saffranine contain the triphenyl-methane?

A. Nobody knows, as far as I am aware.

Q. Does it contain the amidogen?

A. I think its composition is quite unknown.

Q. Then you cannot tell whether saffranine does or does not contain what you, as a chemist, consider to be the distinguishing character of an aniline dye?

A. No.

Q. In your answers on your direct examination as to the characteristics of aniline dyes, chemically so called, and of azo dyes, chemically so called, how have you classed saffranine in your mind?

A. I have not classed it in either class; I simply don't know yet.

Q. Do you know Magdale red?

A. Yes.

Q. How is that produced?

A. That is made by heating amido-azo-naphthaline with naphthylamine.

Q. How do you classify that?

A. Its structure is likewise unsettled.

Q. Does it contain the amidogen?

A. Possibly.

Q. The triphenyl-methane?
A. No; I think not; but there is just where we don't know; I don't know what its structure is.
Q. Then you haven't classified that at all?
A. I haven't classified that either.
Q. Do you know methylene blue?
A. Yes.
Q. How is that produced?
A. That is a new dye-stuff quite recently introduced. What I understand by methylene blue, it is a——
207 Q. You can tell me whether any aniline enters into its production.
A. Aniline derivatives are used in making it; yes.
Q. And has it the amidogen?
A. Yes; it has amidogen.
Q. Has it triphenyl-methane?
A. No.
Q. How do you classify it?
A. It cannot be positively classified, because at the present moment there is a great discussion as to its formula.
Q. Then, you haven't classified it?
A. I haven't classified it positively.

By plaintiffs' counsel:

Q. How recently was that dye produced?
A. The patents are at this present moment in litigation, and I think that it is not more than a year or two since the first manufacture of that color.

By defendant's counsel:

Q. Do you know nigrosine?
A. Nigrosine I know of, also; but I don't know how to classify that yet; that is still unknown.
Q. Do you know induline?
A. I know that likewise; that is part of that group of unknown bodies which are related to each other, but which we cannot yet classify.
Q. Is nigrosine made from aniline?
A. Yes.
Q. Is induline made from aniline?
A. Yes.
Q. Then, all the four dyes last mentioned by me are made from aniline?
A. Yes.
Q. Do you know chrysoidine?
A. Chrysoidine, yes; that is closely related to the aniline yellow and to the Bismarck brown; it is an intermediate stage between the two; it is an azo color and is diamido, while the aniline yel-
208 low is monamido, and the Bismarck brown is triamido.
Q. Chrysoidine is a base, is it not?
A. It is basic; yes.

Q. And if you class chrysoidine as an azo color you cannot say azo colors are acids?

A. No; there is no rule without exceptions, especially in the classification of natural objects.

Q. Does aniline enter into the manufacture of chrysoidine?

A. Yes.

Q. Orange II you class as an azo?

A. Yes.

Q. Aniline enters into the manufacture of that, does it not?

A. Yes; on one side; and on the other side naphthaline.

Q. Then, in your chemical classification, you are taking as your criterion neither the common understanding of persons in trade and commerce and manufacturers who deal in or used coal-tar colors in 1870 nor the derivation from aniline as determining whether you will say a thing is an aniline color or not?

A. That is true; that is correct.

Q. Now, if you take either the common understanding of men who dealt in or used coal-tar colors in 1870 or the derivation from aniline in practical processes of manufacture as the criterion by which to determine whether a dye or color is an aniline dye or color or not (classifying according to either of those, as you understand them to be), could you apply the different distinctions which you have stated here as existing between azo colors and aniline colors?

PLAINTIFFS' COUNSEL: I object to that question. It con-
209 tains an assumption on the part of the witness as to what was chemically understood by men engaged in trade and commerce in 1870, when the witness has stated that he doesn't know what they did understand upon that subject. It is an unfair question in that respect.

DEFENDANT'S COUNSEL: He does understand something about it.

(Objection overruled. Counsel for plaintiffs excepted, and the exception was duly allowed.)

A. I should say, in the first place, that I do not think there was any knowledge on the part of those dealing in those colors as to what was or was not aniline; they took as aniline anything that had anything whatever to do with aniline works; if it was sold by a firm that usually sold aniline colors they would take it for aniline without any question at all as to whether it was or was not, and if I accepted not their understanding but their ignorance as the basis of a classification I don't think I could make any classification whatever on that or any other subject.

Q. If you included in the class of aniline dyes and colors all dyes and colors into the manufacture of which aniline entered would these distinctions you have stated be true of a class?

A. No.

Q. If you included in the class of aniline dyes or colors all dyes or colors which were, in 1870 or prior thereto, known to trade and commerce as aniline dyes or colors, as you understand it, would these distinctions be true?

A. I could make no distinction.

Q. Do you know this book that I now show you?

A. I don't read German.

Q. Do you know the book?

A. Oh, yes; I know the book.

210 Q. It is a standard book or authority, is it not?

A. It is a good book. It is very hard to say of any book that it is an authority, because book-makers make mistakes as well as anybody else.

Q. Just as well as experts?

A. Yes; I am not infallible.

Q. Will you tell me whether this statement is correct which I have found in this book: "Aniline yellow. By this name a yellow coloring matter had been brought into commerce in the year 1864 by the aniline color works of Simpson, Maule & Nicholson. The substance consists of a brownish-yellow crystalline powder, and has been recognized in the principle by Martius and Griess as a salt consisting of oxalic acid and a base, having a composition like that of diazo-amido-benzol ($C_6 H_5 N_2 NH, C_3 H_5$), but is not identical, and is called amido-diphenylamid or amido-azo-benzol ($C_{12} H_9 (N H_2) N_2$). If the aniline yellow of commerce is dissolved in hydrochloric acid and the solution thus obtained supersaturated with ammonia a strong precipitate is produced which is the cause of the color." Does that correspond with your understanding of the state of the science at that time, in 1870?

A. Yes, sir.

Q. And what I have read here was known then, was it?

A. I have no doubt.

Q. Do you know the book called "Smith's Practical Dyers' Guide," an English book?

A. No; it is a new book to me; I have never seen it before.

211 Q. It is a book published in London in 1880. Don't you know that this is the practical hand-book that dyers use in this country?

A. Not to my knowledge; I never saw the book before.

Q. I find in this book, among the practical directions given for dyeing, one for dyeing with aniline scarlet. There are a dozen different directions, I should think, through the book for dyeing with "aniline scarlet." You don't know that as a chemist?

A. No; I don't know that name as a chemist. It might be one of several things; it might be rosolic acid.

Q. Do you know what business men have known as aniline scarlet?

A. Well, there was a great quantity of rosolic acid sold a few years ago here as pure scarlet, and therefore it might be rosolic acid.

Q. I find here, under the head of the "mode of dyeing fine aniline colors," magenta, red shade; magenta, blue shade, and ponceau yellow. What is ponceau yellow?

A. I think ponceau is an azo color.

Q. The dyers are mistaken about that?

A. Yes; they didn't know it.

Q. Aniline yellow and orange colors, those are the ones we have been talking about?

(Objection overruled. Counsel for plaintiffs excepted, and the exception was duly allowed.)

A. I think they are, probably.

PLAINTIFFS' COUNSEL: I object to that. If the object of this inquiry is to prove any commercial usage in this country, which is to be alone admissible, I insist that it is incompetent to do it by reading from a book published in London in 1880, upon the question of commercial usage in this country in 1870 and 1874.

212 THE COURT: Thus far counsel has framed his enquiry upon the book, and the witness gives the evidence. He doesn't testify from the book.

PLAINTIFFS' COUNSEL: I have no objection to counsel using the book to prompt himself, but he is using the book to introduce what is not material and competent.

Q. If, under directions for the mode of dyeing with fine aniline colors, directions for the use of eosine, orange, Bismarck brown, aniline yellow, aniline orange, and ponceau crimson were given, you would say, would you not, that that was not in accordance with your chemical classification of colors?

A. I should say that the person giving those directions did not know much about the subject he was discussing.

Q. He would illustrate the ignorance of practical dyers as distinguished from the information of scientific men, would he not?

A. He would illustrate the difference in the amount of knowledge of different individuals.

Redirect by plaintiffs' counsel:

Q. The induline and other dyes which were inquired of in the same connection, the constitution of which you have stated not to be fully settled, and therefore not classed in your mind in respect to distinctions between azo and aniline colors some years hence, are all recently discovered dyes, are they not?

A. Not all of them. Magdale red was discovered, I think, in 1867, but it could hardly be called a dye in the commercial sense, for I don't think it has ever been manufactured in any quantity. I know I had great trouble in getting a very little at an immense price. I only heard, in fact, I think, of a single pound

213 being imported into this country.

Q. That Magdale red has never been an article of commerce in this country?

A. I think not. I have regarded it as a chemical curiosity. This is one of the few bodies that fluoresces red; generally they are green or blue. The saffranine has been known for many years; but, I think, induline and nigrosine, which are the other two you refer to, are comparatively recent.

By defendant's counsel:

Q. Later than 1870?
A. Oh, yes; I am sure about nigrosine; induline I don't recall.
Q. What is your information about that?
A. Nigrosine?
Q. Yes.
A. When I say I am sure, I am sure. I never heard of it until comparatively recently; it may have been that I overlooked it.

By plaintiffs' counsel:

Q. Do I understand you to have said that all coal-tar colors, so far as you knew, were classed as aniline dyes and colors in 1870—those that were then known?
A. By the ordinary dealers and people who paid no attention to the nature of the thing.
Q. Was that pure picric acid?
A. Yes; I think it was on the price-lists picric and rosolic acid.
Q. They were on the price-lists with aniline?
A. They were on the price-lists with aniline colors, and bought and sold as aniline colors.
Q. Although they were known and used long before aniline colors were discovered?
A. Oh, yes; half a century.
Q. Your knowledge of them is not derived from buying and selling them in a commercial way yourself?
214 A. No; not myself, but from what I have seen in technical journals and works on dye-stuffs.
Q. Did I understand you that Manchester yellow was the same with amido-azo-benzole?
A. Oh, no; Manchester yellow is a naphthaline body obtained by combining with naphthylamine nitric acid.
Q. By a naphthaline body you mean what?
A. You start with naphthylamine.
Q. Is that a phenol body?
A. That is a phenol.
Q. It comes within the class of colors that Professor Chandler spoke of as phenols?
A. Phenols; yes.

(Another witness was then examined, after which Prof. Morton was recalled and further examined by plaintiffs' counsel.)

Q. I omitted to ask you what I intended, in view of the cross-examination of the district attorney upon the orange II and IV. He asked you if they did not contain amidogen and were not made from aniline, and you said that, notwithstanding those facts were so, you did not call them, and that they were not, aniline dyes. State why they are not aniline dyes.
A. Because they have neither the chemical constitution nor the chemical and physical properties which characterize aniline colors, that being a negative statement; because, positively, they do have the

chemical constitution and do have the properties which characterize the azo colors.

Q. And one of the most important of those is what?

A. The double nitrogen link.

Q. Uniting two sets of bodies?

A. Yes; two aromatic groups, as we call them.

215 By defendant's counsel:

Q. Before, being a chemist, you spoke as a chemist, and now you speak as a chemist?

A. I speak as a chemist as to chemical things.

One of the plaintiffs being upon the stand and under cross-examination was asked:

Q. I notice in your appeal to the Secretary of the Treasury in this case it is headed "Wilhelm Pickhardt and Kuttroff, Badische Anilin and Soda Fabrik, special partner." Does that correctly express the relation?

A. The Badische Anilin and Soda Fabrik are the special partner of the firm of Wilhelm Pickhard and Kuttroff.

Q. (Showing the witness paper heretofore marked for identification "J. H. F., 2.") Is that one of the Badische Anilin and Soda Fabrik price-lists?

A. This is a piece of paper that has been mutilated very much.

Q. I ask you if that is one of the price-lists of that concern?

A. A great deal of it has been cut away.

Q. Answer my question first.

A. It reads in German——

PLAINTIFFS' COUNSEL: Don't read it, but just answer the question.

The WITNESS: I cannot answer it. This is not the price-list, as they are sent to me. I never saw one of them until I see it here. This reads in German: Price-list of Badische Anilin and Soda Fabric; colors for lithographing and book-printing, and espe-
216 cially for decorative painting, printing, &c. Stuttgart is a sales agency, a depot for selling the products of the Badische factory in Germany, in Austria, and in some places where they have no special representatives or special house.

Now, in Russia they have a house themselves. Here in this country we are their representatives. In England they have several agencies. In France, in Paris, they sell for themselves. These pages seem to have been separated and put together again, and something taken out, or they were separate; certainly they are two pieces of paper.

Q. It has been worn in two and a strip of paper pasted on to keep them together.

A. Something has been taken out.

The paper is offered in evidence by defendant's counsel.

Objected to as immaterial and incompetent.

By plaintiffs' counsel:

Q. The Anilin and Soda Fabrik at Stuttgart is not the company which is special partner of your house; that is situated at Mannheim?

A. That is located at Mannheim; that is part of it.

Q. Did you ever see this paper before?

A. Never in my life.

Q. Nor any one like it?

A. Never in my life.

Plaintiffs' counsel objects to the paper.

The COURT: I understand that it is admissible, though perhaps not now.

DEFENDANT'S COUNSEL: You don't object to it on the ground that this is not the proper time to offer it?

PLAINTIFFS' COUNSEL: We object on every ground. This Badische Anilin and Soda Fabrik is the special partner acting
217 for the firm at Mannheim. This is a catalogue issued from Stuttgart. True, they are the same, but neither of these concerns act, so far as this paper is concerned, with the plaintiffs in New York.

The COURT: That is the corporation which issued this paper, and special partner of this house, isn't it?

PLAINTIFFS' COUNSEL: In name, yes: a special partner.

The WITNESS: This is from Stuttgart, the sales depot for Germany.

The COURT: Still it is the same corporation?

The WITNESS: It is a part of the corporation.

The COURT: I think it is admissible in evidence. I am not speaking now of what use we will make of it, but I don't think it ought to be stricken out of the case.

To the ruling of the court admitting the evidence counsel for the plaintiffs excepted, and the exception was duly allowed.

The paper thus admitted was marked Plaintiffs' Exhibit B, of which the following is a copy:

218 DEF'T'S EX. B. Ident., J. H. F. (2).

Preis-Liste der B. Aniline & Soda Fabrik, Stuttgart.

Aniline-Farben.

STUTTGART, *den* ——, 1882.

Fuchsin. (Rosein) Wasserloslich:

Nummer T.

39. Doppelt raffinirt, arsenfrei.
40. Raffinirt, arsenfrei.
7. Diamant grosse Cristalle, arsenfrei.
6. " Kleine "

16—97

38. Grosse Cristalle II.
5. Kleine " II.
V1. Cristalle, arsenfrei.
V2. " "
V3. " "
4. R G.

Cerise:

1. D IV gelblich.
209. D N sehr gelblich, arsenfrei.
3. D II " "
9. D III " "
2. H.

Fuchsin. Saurebestandig:

130. Fuchsin S, patentirt, arsenfrei.
144. " S III, patentirt, arsenfrei.
131. Marron S, patentirt.
Fuchsin S T.

Violet. Spiritusloslich:

10. Amaranth, rothest.
11. Victoria, rothlich.
12. Neuviolet, normal.
13. Violet de Fuchsine, blaulich.
14. Parme, blau.

Violet. Wasserloslich:

208. Amaranth W, roth.
43. Neuviolet W, mittel.
91. Parme, W, blaulich.

219 Methylviolet. Wasserloslich:

Arsenfrei.

411. R R R R rothest.
410. R R R sehr roth.
90. R R roth.
125. R rothlich.
145. M B mittel.
170. B blaulich.
250. B B blaulich.
103. B B B blaulich.
350. B B B B blau.
400. B B B B B sehr blau.

Methylviolet. II. Wasserloslich:

Arsenfrei.

41½. R R R R rothest.
41. R R R sehr roth.
9. R R roth.
12. R rothlich.

14. M B mittel.
17. B blaulich.
25. B B blaulich.
10. B B B blaulich.
35. B B B B blau.
40. B B B B B sehr blau.

Dahlia. Wasserloslich:

Nummer. Arsenfrei.
551. B O blaulich.
552. B B O blaulich.
553. B B B O blaulich.
554. B B B B O blau.
555. B B B B B B O sehr blau.

Alcaliblau:

188. Rothlich.
538. R R R sehr roth.
536. R R roth.
537. R rothlich (Guernsey).
539. B M mittel.
535. IV mittel.
534. III mittel.
543. B B L mittel.
533. II reinblau.
540. B B B L reinblau.
541. B B B B L lichtblau.
532. O grunlich—B B B B B.
531. O E sehr grunlich.
545. B B B B B B sehr grunlich.
530. O D nachtblau (Methylblau).
529. D " "

Blau. Spiritusloslich:

507. R R roth.
506. IV.
505. III mittel.
504. II reinblau.
503. 220 O grunlich.
502. O E sehr grunlich.
501. O D nachtblau (Methylblau).
508. D " "

Blau. Wasserloslich:

511. R R R R rothest.
523. R R R sehr roth.
522. R R roth.
521. L S rothlich.
520. IV rothlich.
518. IV mittel.
519. IV grunlich.

517. III mittel.
516. II reinblau.
513. I B fur Baumwolle.
515. O grunlich.
514. O E "
512. O D nachtblau (Methylblau).
524. D N " "
126. Marineblau B, patentirt, arsenfrei.
127. " R, " "
101. " S, " "
102. " S R, " "
33. Methylenblau, " "
32. " R, " "

Grun. Methyl-Grun, arsenfrei:

29. O O O G G fst. cristallisirt, gelblich.
31. O O O B B " " blaulich.
60. T N geinst cristallisirt, gelblich.
222. O O gelblich, crist.
227. O blaulich, feinst.
Roth Clare R.
Rein Clare I.
Nummer " II.
228. A gelblich.
229. B blaulich.
231. Blaulich 3.
232. Blaulich 4 (Smaragdgrun).

Neuvictoria. Grun, arsenfrei:

167. Extra.
134. O blaulich.
132. I "
133. II "

Brilliant. Grun, arsenfrei:

166. Extra.
158. O sehr gelblich.
160. II " "
142. Lichtgrun S saurebestandig, arsenfr.
165. " S extra " "

221 Braun:

164. Echtbraun, patentirt, saurebestandig, arsenfrei.
111. Vesuvin, A hell, wasserloslich.
112. " S mittel, "
153. " R N " "
181. " O " "
114. " P " "
113. " D " "
D dunkel.
217. Cannelle, wasserloslich.

108. Bismarck, wasserloslich mit etwas Schwefelsaure.
22. Marrontaig, wasserlosl., p. 100 kilo.
23. Marronpulver B wasserlosl., " "
211. Grenade, wasserloslich, p. 1 kilo.
24. Grenade, Carmin, p. 100 kilo.

Eosin. Arsenfrei:

499. Eosin, spritloslich, blaulich.
500. " A wasserloslich, gelblich.
489. " M L " "
490. " M L G " "
495. " R " "
492. " R G " "
491. " B " mittel.
497. " B N " blaulich.
494. " B B N " "
487. " J " "
49. Erythrosin I " "
105. " II " "
104. " extragelblich wasserlosl.
177. " extrablaulich "

Diverse Farben:

Safranin I.
294. Safranin O wasserloslich, arsenfr.
292. " X X " "
196. " X X B " "
234. " II " "
297. " B " "
296. " B B blaulich " "
216. Anilinscharlach N f. Baumw., arsenfr.
253. Anilinscharlach B.
141. Brillantroth, arsenfrei.
146. Echtponceau B, arsenfrei.
154. " G G N "
147. " G "
137. Ponceau G, patentirt, arsenfrei.
168. " R, " "
169. " R R, " "
185. " R R R, " "
179. Naphtylcarmin B, arsenfrei.
180. " X, "
155. Orange R, arsenfrei.
129. Echtroth A, patentirt, arsenfrei.
163. " B, " "
178. Orseille-Roth, arsenfrei.
156. 222 Naphtolgelb S, saurebest, patentirt, arsenfrei.
128. Echtgelb, arsenfrei.
175. Echtgelb, extra, arsenfrei.
189. Metanilgelb "
190. " extra "
257. Azoflavin II. "

70. Palatin-Orange, wasserloslich.
34. Anilingelb, wasserloslich.
214. Phosphin N, wasserloslich, arsenfrei.
198. " R N, " "
99. Uranin, wasserloslich, arsenfrei.
74. Orange II " "
28. " IV " "
173. " N " "
174. " O " "
" " P " "
109. Chrysoidin wasserloslich, arsenfrei.
107. Helianthin " "
115. Nigrosin, spritloslich, 3 Nuancen.
98. " W wasserloslich.
118. Indulin N N wasserloslich.
116. " N spritloslich.
65. Corallin, spritloslich.
64. Ponceau, wasserloslich.
Safflor-carmin, flussig.
Picrin-Saure, crist. I.
Cochenille ammoniacale.
Flavine, einfach.
" F.
" concentrirt Sanford.
Anilin-Oel O.
" I.
" II.
Anilin-Salz O cristallisirt.
" " OO in Pulver.
" " 35 " "
" " 34 " Stucken.
" " in Kuchen.
Fixation (Schwelelkupfer).
Salmiac.
Salmiacgeist.
Orange IP.

Fabrikate aus Orseille und Indigo:

Orseille in Krautern double Mozambique pr. 100 kilo.
" simple Mozamb. " " "
Orseille-Extract pr. kilo.
" conc. " "
Persio (Cudbear) double Mozambique.
" " simple.
Indigo-Carmin je nach Consist.
Indigo-Extract " " "
Indigotine I.
" II.
Penseelack, Indigo-Purpur.
Indigo, feinst gemahlen.

223 Alizarin fur Druckerei & Farberei in allen Nuancen.
Soda, raff, caustische Soda und Glaubersalz leut besonderer liste.

Verpackung: Anilinfarben in ½ Kilo-Dosen frei, kleiner Packung extra. Bei allen ubrigen Artikeln Packung billigst berechnet. Passer uber 3 Cehtner frei, per Comptant mit 2 % Sconto.

The same witness was asked, on cross-examination, as follows:

Q. (Showing witness a paper.) Is that one of the price-lists of the Badische Anilin and Soda Fabrik?

A. This is the printed price-list with certain prices written out in ink and pasted in—written out on paper and pasted on the different pages.

Q. The first question is whether that is a price-list of the Badische Anilin and Soda Fabrik?

A. I was going to say that, in the shape that this is in, I have never seen one. I have only seen price-lists without the pasting of these papers in.

Q. Aside from the pasting of the papers in it, do you recognize it?

A. I would certainly recognize it as a price-list of the Badische Anilin and Soda Fabrik.

Q. Do you know the writing of these papers that are pasted in?

A. I don't know the handwriting.

Defendant's counsel then offered the printed portion of the price-list in evidence thus identified.

Plaintiffs' counsel objected to the admission of the said price-list in evidence on the same grounds as to the Anilin-Farben
224 price-list, Defendant's Exhibit B. The objection was overruled; to which ruling of the court admitting the evidence the plaintiffs' counsel excepted, and the exception was duly allowed.

The paper thus admitted, Defendant's Exhibit E, was similar in character to Exhibit B, heretofore set out in detail.

During the cross-examination of this witness defendant's counsel said:

DEFENDANT'S COUNSEL: I offer the letter marked for identification A in connection with the case of samples which has just been identified by this witness, as well as Mr. Carl Pickhardt.

Plaintiffs' counsel objected to the admission of the paper as incompetent and as not tending to prove commercial usage. The objection was overruled. Plaintiffs' counsel excepted, and the exception was duly allowed.

The letter thus offered was marked Defendant's Exhibit F, of which the following is a copy:

DEF'T'S EX. F. For Ident., J. H. F. (1).

"Wm. Pickhardt & Kuttroff, 98 Liberty street, New York.

Branch offices: Boston, 43 Kilby St.; Philadelphia, 39 No. Front St.; Manchester (England), 4 Charlotte St.

(P. O. box 4350.)

NEW YORK, *May 24th*, 1879.

Messrs. I. Berges & Co., Philad'a.

DEAR SIRS: We have taken the liberty to send you by express (charges paid) a box with samples of the various aniline dyes.

Trusting that the collection may be of interest to you, we remain,

Yours truly,

WM. PICKHARDT & KUTTROFF,
P'r CARL PICKHARDT, *Att'y.*"

225 Plaintiffs having rested the case and the court having refused to direct a verdict as requested by the defendant, the defendant called as a witness—

JOHN H. LORIMER, who testified that he was a dealer in dye-stuffs and a dyer; that he had been in business concerning dye-stuffs for about twenty-five years, and for the last nine years he had been dealing in them, part of the time as a salesman and latterly as a member of the firm of J. C. Bloomfield & Co., and that prior to that time he used dye-stuffs as a practical dyer.

He further testified that he knew the orange II and IV and the naphthylamine red of the plaintiffs' importations.

On being asked if he knew resorcine red J, he said he knew the resorcine red, but did not know the particular names; that they were all liable to be called anything, the name being no criterion to judge the goods by. This witness was asked as follows:

Q. Are those aniline colors?

Counsel for the plaintiffs objected. Counsel for the defendant then said:

DEFENDANT'S COUNSEL: Why, this is the very question you put to your witness.

The COURT: Must not the rule work both ways?

PLAINTIFFS' COUNSEL: Certainly, if he shows what these dyes are composed of. But it does not appear that this witness has any knowledge in respect to these dyes, except what he has just now said—that he knows there is a thing so called. Whether they
226 are undertaking to prove that these are not aniline dyes, in fact, or whether they are asking the question commercially, I don't know. If they show a basis of knowledge—what he bases his knowledge upon—that is a question that can be asked. But they haven't shown yet that basis of knowledge. I object that this witness is not competent, so far as appears, to testify as to the fact about

which he is asked. He may become competent, but at present he has not been shown to be competent.

The COURT: As I understand, he is both a dealer and a user of these dyes. Now, it seems to me that, being a dealer, certainly he is competent to say by what name they are known.

PLAINTIFFS' COUNSEL: That brings us, if your honor please, right to the face of the confusing question (confusing to my mind, certainly), whether the district attorney stands upon the position that the clause in the statute, "aniline dyes and colors by whatever name known," is a commercial designation or a descriptive enumeration, because the testimony that is called for is different, whichever position the district attorney may take upon that point. If he takes the position that it is a commercial designation, then the question will be whether the plaintiffs' dyes were bought and sold and dealt in among merchants, importers, and wholesale dealers in the year 1874 under the name of or under the class of aniline dyes. That is the commercial view. But if it is taken to be a descriptive enumeration, then we are bound to have statements from people who know in fact what aniline dyes at that time were and what in fact aniline dyes now are, and to know particularly in a chemical pro-
227 duct, which you cannot tell by looking at what it is, and which you may not be able to tell by using it what it is; but certainly, where it does not appear that this witness has ever used it, or that he has done anything except look at it, my friend must show some basis of knowledge before he can call upon this witness to express anything approximating an opinion. And it is not asked for as an opinion, but as a fact, whether it is or is not an aniline dye within a certain classification. Now, all the witnesses who, when they were put upon the stand and asked that question by us, stated their classification and their grounds, and then there was something for the jury to judge from upon the facts which they stated. But here he is not shown to have any competency in that respect.

DEFENDANT'S COUNSEL: I have put to Mr. Lorimer the precise question put by my friend on the other side to one of his own witnesses. Here is the question, after having put the samples in the witness' hands: "Are they an aniline dye? A. I have never known them to be applied as aniline."

PLAINTIFFS' COUNSEL: That question was put after proving that he had actually used and known those dyes, and having used what he understood to be aniline dyes, and after stating what they were. There is no evidence that this witness has used these dyes.

By defendant's counsel:

Q. Have you used orange II and IV?

A. I have used all the anilines that have ever been imported into this country, and tested them. There has not been a color
228 introduced in the last twenty-five years that I have not tested in some way practically.

The COURT: The way it strikes me is this: Congress has used this term "aniline dyes" as a term, as a word, in the statute. They have

not said "what is known to chemists" nor referred it to that class at all; but they have used that word as a part of the language of the country. Now, I think when it is used with reference to importers, it must be used, it must be taken and used, in the sense in which it would be understood by them, and that we cannot tie it down, although it is a subject involving chemistry and the terms of chemists, to the language of chemistry, but to the general use of the word. The chemical use of the word might be so extensive as to be the use of the country; but I don't think it has been shown that it has got to be so as yet. I think we must receive all the evidence as to the use of those terms in the statute. I think the subject is wide open. This was used by Congress in 1864 with reference to what was then known; it was used by Congress in 1870 in reference to what was then known, and then in 1874 with reference to what had then come to be known; and these provisions of the statute were made with reference not only to what of the subject was then known, but what might come up thereafter—all these decisions together. Now, I think on this subject, trying this case by jury, we must lay before the jury not only the terms of art and chemistry, but also the popular meaning among those to whom the act of Congress was addressed. Not being a merchant or an importer myself,

229 I don't know. I am not capable of deciding it as a matter of law. The presumption is that the jury are not importers and users; so that they don't know. Therefore the evidence of merchants, importers, dyers, and chemists is all admissible on this subject, to be used by the jury when the evidence is all in and the law is laid down to them, and they shall see it applied. So I shall admit all this class of evidence.

PLAINTIFFS' COUNSEL: I beg to have my exception noted to your honor's ruling on all the grounds that I stated in my objection.

Q. (Repeated.) Are those aniline colors (orange II, orange IV, naphthylamine red, and resorcine J)?

A. All so considered by practical men.

Q. Were you familiar with the use of the expression "aniline dyes and colors" in and prior to the year 1870 and in and prior to the year 1874, in this country?

A. Yes, sir.

Q. Among importers and other people?

A. Yes, sir; and dealers.

Q. And dealers?

A. And users; I was; yes, sir.

Q. To indicate what was the expression used among dealers in this country?

To which question the plaintiffs' counsel objected as incompetent, irrelevant, and immaterial. The objection was overruled. Plaintiffs' counsel excepted, and the exception was duly allowed.

The testimony then proceeded as follows:

A. It applied to all artificial colors.

Q. In using the term "artificial colors" what distinctions do you make; what do you exclude?

230 A. Between the old-fashioned method of wood and mineral colors, as dyers of twenty-five years and more ago were accustomed to making the colors, and also vegetables.

Q. What are sometimes called natural colors?

A. And natural colors; yes, sir.

Q. Have you ever known any change in the trade uses of this expression?

To this evidence plaintiffs' counsel objected as immaterial, irrelevant, and incompetent. The objection was overruled. Plaintiffs' counsel excepted, and the exception was duly allowed.

The witness then answered: Not at all.

Q. Not until now?

A. Not until now.

The witness was then asked if he knew various colors, which were named to him, to wit: Manchester yellow, Bismarck brown, saffranine, methylene blue, Magdale red, and chrysoidine, and having stated he did, the following question was asked:

Q. Under what name—what generic name—have these colors been dealt in and used in this country?

To which question plaintiffs' counsel objected on all the grounds before stated. The objection was overruled The plaintiffs excepted, and the exception was duly allowed.

The evidence then proceeded, as follows:

A. Aniline colors.

Q. How long has that been the case?

To this question plaintiffs' counsel objected on all the
231 grounds heretofore stated. The objection was overruled. Plaintiffs' counsel excepted, and the exception was duly allowed.

The evidence then proceeded:

A. From the time they were introduced until now.

Q. Under what name were those colors introduced?

To which question counsel for the plaintiffs objected on all the grounds heretofore stated. The objection was overruled. Plaintiffs excepted, and the exception was duly allowed.

The witness then answered: "Under the name of aniline colors."

The following proceedings then took place:

The COURT: We understand that the plaintiffs' counsel object to this class of testimony and except to its admission. It is not necessary to repeat it.

PLAINTIFFS' COUNSEL: If it is so understood.

The COURT: The Court so understands it. It will do no good to

repeat it unless something new is raised. I have noted your exception to the whole class.

FREDERICK TURNBULL, a witness called on behalf of the defendant, testified—

That he was the representative of a house in Philadelphia who are dealers in aniline and dye-stuffs and importers; he had been with them about two years. For a short time before that he had been in another house in the same city; before that he was dyeing alizarine reds; that he was brought out to this country to dye alizarine reds; that was why he came here first, which was in 1880.

232 He testified that before that he was engaged in dyeing and bleaching goods in Scotland on his own account; he never manufactured dye-stuffs, but had used them, and that he was familiar with the various aniline colors which are now in use among dyers, and with the degrees of fastness of these various dyes.

The witness was then asked the following question:

Q. Won't you tell us what your experience has been as to aniline colors generally?

To this plaintiffs' counsel object, and the following proceedings were had:

PLAINTIFFS' COUNSEL: I object. If the question is put in the form of his knowledge of the relative fastness of particular dyes, naming them, I shall not object; but this question of Mr. Turnbull's opinion of what were aniline dyes in this country at the time that these colors were imported or at the time that the act was passed I object to, because he didn't come here until afterwards. His knowledge of particular dyes and how they act and how they behave and what the results are I would not object to.

The COURT: I understand he is asked now as to the qualities of these dyes, with reference to their fastness.

PLAINTIFFS' COUNSEL: What this witness may understand by the name of aniline dyes is not competent.

DEFENDANT'S COUNSEL: That is the same question you asked your witness.

PLAINTIFFS' COUNSEL: That may be; but this witness did not get here until 1880, and this question is in effect asking the

233 witness to tell what aniline dyes were understood to be in this country before he came here. He didn't come here until 1880. If you ask for particular dyes and he knows these dyes and the degrees of fastness of particular dyes since he came here I am willing he should testify; but he cannot be asked to testify generally as to the aniline dyes or as to these dyes before he came here. He has not been where he could obtain knowledge. The question is, What are coal-tar dyes here? He is not competent to testify as to that.

DEFENDANT'S COUNSEL: The question is relative fastness.

PLAINTIFFS' COUNSEL: He cannot know what the relative fastness was of aniline dyes.

The COURT: I understand the ground on which you claim there is no similitude is as to the colors in question compared to aniline dyes in relation to fastness, and therefore it would be competent for the Government to show that there is no difference, and that there is in fact a similitude.

PLAINTIFFS' COUNSEL: I do not object to that class of testimony.

The COURT: I was about to add that that difference in the country where he was located and the experiments that he made would have no bearing on the question of similitude.

PLAINTIFFS' COUNSEL: If there was a difference in the two countries in the term aniline dyes, of course; but I cannot assume that there was any difference. What he has learned here since 1880, when he came here, is not competent to enable him to answer so general a question. If you define what they meant by aniline
234 dyes, or if they ask him the question in some such form as that, it will avoid the difficulty. They may ask him the difference in degree of fastness of coal-tar dyes, and I shall not object to that question. To get at what this witness knows actually I have no objection.

The COURT: I do not think we can exclude it on that ground, because it is material, and the distinction which you make, to know whether they are alike as to fastness, would be the same thing all over the world; so I think that this is relevant testimony.

Plaintiffs' counsel thereupon excepted to the ruling of the court admitting the evidence, and the exception was duly allowed.

The witness, having stated that he knew orange II and orange IV, being part of plaintiffs' importations, was asked:

Q. Under what names are these artificial colors bought and sold in this country?

Counsel for the plaintiffs objected on the ground that the witness was not an expert of the required time, as testified by him; to which objection the court said:

The COURT: I think that is proper; as I said when it was introduced on the other side, we will let it cover the whole ground.

Counsel for the plaintiffs excepted to the ruling of the court, and the exception was duly allowed.

The witness then answered, "They are sold as aniline colors."

The witness was then asked:

235 Q. Is that true of naphthylamine red?

Counsel for the plaintiffs objected on the same ground. The objection was overruled. Plaintiffs excepted, and the exception was duly allowed.

The record then proceeds as follows:

A. Yes, sir.

Q. Of orange II and IV?

PLAINTIFFS' COUNSEL: I object to that, and wish to have my exception noted specifically to each of these questions.

A. Orange II and IV.
Q. And of resorcine?
A. Yes, sir.
Q. How as to eosine?
A. Eosine?
Q. Yes.
A. Yes, sir.
Q. Anisol?
A. Anisol?
Q. Yes.
A. Yes, sir. I don't know what you mean by that.
Q. Do you know the ponceau scarlets?
A. The ponceau?
Q. Yes, sir.
A. Yes, sir.
Q. Under what names are they sold?
A. They are sold as aniline scarlets.

PLAINTIFFS' COUNSEL: Your honor will note my exception to each of these questions specifically. I object to the whole class, and wish to have my exception noted specifically.

Q. Do you know Bismarck brown?
A. Yes, sir.
Q. Is that an aniline color?
A. An aniline color; yes, sir.
236 Q. Manchester yellow?
A. Yes; they are all anilines, sold as anilines, inquired for as anilines.

Another witness, HENRY D. DUPEE, being examined on behalf of the defendant, testified that he had been importing and dealing in anilines for fourteen years past and a manufacturer of dye-stuffs and chemicals, and he then was asked:

Q. What are included within the expression aniline dyes and colors among the persons who deal in dyes in this country?

Counsel for the plaintiffs objected on the same grounds as before to similar questions. Objection overruled. The plaintiffs excepted, and the exception was duly allowed.

The same witness being asked if he knew the plaintiffs' importations, the subject of this suit, said that he had heard of them; that he did not deal in them, so far as he knew. He was then asked:

Q. Under what general name are they dealt in by the trade?

The record proceeds as follows:

PLAINTIFFS' COUNSEL: I object to that question. He says he does not know. He does not deal in them, and cannot be a witness upon that subject.
The COURT: That is what I understood him.

Q. Do you know under what general designation those articles are dealt in, bought and sold, by the trade in this country?

A. Yes, sir; aniline colors.

237 The COURT: I understood him to say that he did not know.

PLAINTIFFS' COUNSEL: Before any further questions I want to examine him about how he does know.

Preliminary cross-examination by plaintiffs' counsel:

Q. You have never bought or sold them yourself?
A. Not to my knowledge.
Q. Have you ever seen anybody buy them?
A. I can't say that I have, sir.
Q. Have you ever seen anybody sell them?
A. I cannot say that I have, sir.
Q. How, then, do you know how they are bought and sold in this country?
A. I only know that we talk about them in our store very often. All the trade come in there and talk about these colors.
Q. Then your knowledge is not derived from any actual transactions?
A. Not by purchase; no, sir.
Q. Nor by knowledge of any actual transactions?
A. No, sir.
Q. But from what people say who come in and talk in your store?
A. Yes, sir.

Direct examination resumed by defendant's counsel:

Q. (Repeated.) Do you know under what designation those articles are dealt in in the trade?

PLAINTIFFS' COUNSEL: I object to that question upon the ground that this witness is not competent.

DEFENDANT'S COUNSEL: I will change this question.

Q. By what general name are they known in the trade in this country?

PLAINTIFFS' COUNSEL: I object to that question as incom-
238 petent and irrelevant, and further object that this witness is not an expert.

The COURT: I understand from this witness that he has not dealt in them nor seen them dealt in.

DEFENDANT'S COUNSEL: He says he knows how the trade designate them.

The WITNESS: And I have seen colors.

DEFENDANT'S COUNSEL: He knows what terms the trade use in speaking of these colors. That is the only way you can get the meaning of the designation or its use.

The COURT: I understand him to say that he does not know that from any dealing in them or seeing them dealt in or being present at the dealings.

DEFENDANT'S COUNSEL: No; but he has been in the habit of hear-

ing persons engaged in the trade speak of these colors, and he knows the terms which they use in speaking of them—that is, he knows what they call them. It is the knowledge of those persons that we are trying to get at, whether in conversation among themselves or in actually making a bargain.

The COURT: It don't seem to me that it is competent in any fair construction of the rule.

DEFENDANT'S COUNSEL: I will not press it. I will go on.

Q. Have you dealt in eosine colors?

A. Yes, sir.

Q. And in azo colors?

A. No, sir; we may. I will correct that. We may have bought some and sold them.

Q. And ponceaus?

A. Yes, sir.

Q. Have you dealt in anisols?

A. Have I what?

Q. Have you dealt in anisols?

A. I don't know them, sir.

Q. Have you dealt in any colors known as fast reds?

A. Yes, sir.

239 Q. What yellow colors have you dealt in?

A. Well, we never dealt in any yellow; never made any specialty of any yellow.

Q. Have you dealt in Bismarck brown?

A. Yes, sir.

Q. Have you heard people who are in the trade speaking of colors which go by the specific names of ponceaus and Bismarck brown and fast reds?

A. Any specific names?

Q. (Repeated.) Have you heard the people who are in the trade speak of colors which are known, although by the specific name of ponceaus and Bismarck brown and fast reds?

A. Yes.

Q. By what general name are those colors known in trade in this country?

PLAINTIFFS' COUNSEL: I object to that question on the same ground that I did before.

The COURT: That, I think, is competent.

Plaintiffs' counsel excepted to the ruling of the court admitting the evidence, and the exception was duly allowed.

The record proceeds as follows:

A. Aniline colors.

Q. Has the expression "aniline colors" been in use ever since? Was it in use in 1870?

A. Yes, sir; and before that.

Q. And has been ever since?

A. Yes, sir.

Q. Now, what is the expression used in the trade to designate?

PLAINTIFFS' COUNSEL: I object to that question.
The COURT: He may answer.

240 Counsel for the plaintiffs excepted to the ruling of the court admitting the evidence, and the exception was duly allowed.

The record proceeds:

DEFENDANT'S COUNSEL: The range to which it refers?
A. Well, I should include anything that is a color in itself, or produces a color directly, like red, or blue, or green, or violet, or yellow.
Q. Of what origin?
A. Well, from coal-tar.
Q. That is your understanding of the use of the term?
A. That is my understanding of it; yes, sir.

Another witness, EDGAR HOLLIDAY, called on behalf of the defendant, testified:

I am a manufacturer and importer of aniline colors; have been for twenty years; the name of my concern is Read, Holliday & Sons, Huddersfield, England; Rouen, in France, and in New York, at 22 Platt street; our factory is in Brooklyn, and we have a factory in Wakefield, and at Huddersfield, England. I have been acquainted with aniline dyes and colors during the last twenty years. I have seen samples of color which is known as fast red. I do not know Pickhardt and Kuttroff's naphthylamine roth echt. I have seen samples of a color of the name resorcine red J, as I understand it. What I have seen has been eosine color. I have seen color under the name of orange II and orange IV, otherwise called orange A and orange B. I may say that I know them. I have a ponceau of my own which is entirely different to some ponceaus that I have
241 seen in the market. I am acquainted with scarlets; also color called ponceau; am acquainted with eosines; am not acquainted with anisols, or not under that name.
Q. State whether Pickhardt and Kuttroff's fast red, the rosorcine red J, the orange II and orange IV, or orange A and B, the ponceaus and eosines—state whether or not in the trade they are aniline dyes.

PLAINTIFFS' COUNSEL: I desire, if your honor pleases, to cross-examine the witness as to his expert knowledge before he answers the question.
DEFENDANT'S COUNSEL: He is not put on the stand as an expert.
PLAINTIFFS' COUNSEL: Well, so far as an expert has knowledge of the trade in colors goes.

Preliminary cross-examination by plaintiffs' counsel:

Q. Have you ever used or bought and sold Pickhardt and Kuttroff's naphthylamine red?
A. No, sir.
Q. Have you ever seen it bought or sold—have you ever been present when a transaction was made in it?
A. Not that I bring to my mind.

Q. It is the same with the orange II or orange IV?
A. I don't think that I have purchased them.
Q. Or sold them?
A. Or sold them.
Q. Or seen them purchased or sold?
A. No, sir; not to my knowledge; a great many things happen that I don't know of.
Q. How as to orange IV?
A. I don't know it under that name.
242 Q. Well, do you know it as orange B?
A. I don't know it under that name.
Q. And the resorcine red J, of Pickhardt and Kuttroff?
A. I have tested all these colors.
Q. That is not the question. I ask you have you seen them bought or sold in the market?
A. No, sir; I could not say that I have seen them in the market, but they must have been bought by the parties with whom I have seen them.
Q. You haven't known them to be bought and sold?
A. No, sir.
Q. And you haven't bought or sold them yourself?
A. No, sir.

PLAINTIFFS' COUNSEL: If your honor please, I object to this question.

DEFENDANT'S COUNSEL: Limit the question to ponceaus and eosines. I ask the witness whether or not they are aniline dyes?
A. I regard them as such.

To the ruling of the court admitting evidence plaintiffs' counsel excepted, and the exception was duly allowed.

The record then proceeded:

Q. What tests did you apply to the plaintiffs' colors, the napthylamine fast red and the resorcine red J, and the orange II and orange IV; did you apply the usual tests?

(Objected to.)

A. Yes, sir.
Q. What tests did you apply?
A. When I came across them I tested them for strength and shade to ascertain their commercial value.
243 Q. State whether, in employing the tests which are usual in the trade, you ascertained this, whether or not they are aniline dyes or colors.

PLAINTIFFS' COUNSEL: I object to that. How this witness regards them after testing them and finding out their strength and shade, I submit, is utterly immaterial.

Q. Did you test them in the usual ways?
A. Yes, sir.

DEFENDANT'S COUNSEL: I submit that the witness is competent to

say whether or not, according to the knowledge which he has applied in the trade, these are aniline dyes. He tested them and has seen their behavior and their various qualities by the tests which he employed. He says he employed the usual tests.

By plaintiffs' counsel:

Q. What tests did you employ?
A. I dyed with them for the strength and shade, and I found that——
Q. No matter what you found. I only asked you about the test.
A. That is the test I put them to.
Q. Dyeing?
A. Yes, sir.
Q. That is the only test you used?
A. That is the only test I found necessary to use.
Q. That is the only test you did use?
A. Yes, sir.

PLAINTIFFS' COUNSEL: If your honor please, I renew my objection. The witness is clearly incompetent to state, and what he thinks about it is utterly immaterial.

DEFENDANT'S COUNSEL: I think he is competent to say.

The COURT: He has not said anything that I recollect about his own experience as a dyer.

By defendant's counsel:

Q. What qualifications have you as a dyer?
244 A. I don't claim to have any particular skill in dyeing. I understand color-making pretty well and understand applying the colors to the fibre in the ordinary manner.
Q. Has that been part of your business during the past twenty years, to test aniline colors in the way you have described?
A. To manufacture them and test them, of course; that comes as a necessity.
Q. Are you not a practical dyer?
A. No, sir.
Q. You don't dye goods yourself, but you understand the principle?
A. I dye some things. Yes, sir; I understand the principle very well.

By plaintiffs' counsel:

Q. And you are a practical chemist?
A. No, sir.
Q. And you are not a practical color manufacturer, are you?
A. Yes; I may call myself a practical color manufacturer.
Q. When did you ever make colors; to what extent?
A. I have made colors ever since I was in the firm.
Q. I mean yourself making the preparation of the colors; I know your house do make colors.

A. I have been more or less in the manufacture of colors ever since I was in the firm.
Q. What have you ever made yourself?
A. I have made various colors.
Q. Name one.
A. I have made aniline black.
Q. When?
A. At our factory; every day.
Q. Where is your factory?
A. In Brooklyn.
Q. And what do you do in regard to making it?
A. I apply it to the fibre sometimes.
245 Q. What do you do yourself in regard to the process of making aniline black.
A. If I make an aniline black I prepare my fibre and produce the black on the fibre with aniline oil and chrome.
Q. That is the process of dyeing, isn't it?
A. Yes, sir; but there the color is produced on the fibre at the time. You don't have any color until it is produced on the fibre.
Q. Name some other dye that you have made; you didn't prepare the aniline oil yourself, did you?
A. Yes, sir; I have prepared aniline oil.
Q. To what extent?
A. To quite a large extent; six or seven tons a week.
Q. You have done it yourself?
A. Well, my men do it, and I have superintended it.
Q. Are you superintendent of the works?
A. I am superintendent of my works over here.
Q. What else do you make there?
A. I make our patent fast scarlet on cotton; make our acid magenta, our patent acid magenta. I have made nigrosine, induline, and spirit blues and alkali blues, and scarlets and phosphine, and chrysoidine, and numerous colors.

By defendant's counsel:

Q. That is, they are made under your supervision?
A. Under my supervision.
Q. Do you know the processes?
A. I know the processes.

PLAINTIFFS' COUNSEL: I still insist on my objection.
The COURT: He may answer.

To the ruling of the court the plaintiffs excepted, and the exception was duly allowed.

The record then proceeds:

246 Q. (Repeated.) State whether employing the tests which are usual in the trade you ascertain this, whether or not they were aniline dyes and colors—that is, the Pickhardt and Kuttroff fast red, their resorcine red J, and their orange A and B.

A. They are regarded as such, commercially—commercial aniline colors.

PLAINTIFFS' COUNSEL: I object to that question on the ground that it is not responsive to the question.

DEFENDANT'S COUNSEL: That is for us to object, on the ground that the answer is not responsive, provided it is not so.

The COURT: I think it is admissible.

PLAINTIFFS' COUNSEL: Please note our exception to that answer.

Q. Did your tests satisfy you that they were so?
A. Yes, sir.

PLAINTIFFS' COUNSEL: I object to that question.
The COURT: Let it stand; I think it is proper.

To the ruling of the court admitting the evidence the plaintiffs excepted, and the exception was duly allowed.

The witness was then asked:

Q. What was included under the phrase "aniline dyes and colors" fifteen years ago?

To which plaintiffs' counsel objected on the same grounds as to similar questions. The objection was overruled. Plaintiffs excepted, and the exception was duly allowed.

The witness then answered:

247 All the colors produced from coal-tar, with the exception of anthracene colors. I think as a rule they are not regarded as aniline colors.

Q. That was the commercial understanding at that time?
A. Yes, sir.

ALBERT F. HEAL, being duly sworn and examined as a witness for the Government, testifies:

By plaintiffs' counsel:

Q. What is your business?
A. Dyer.
Q. How long have you been a dyer?
A. About fifteen years.
Q. What was your age when you began?
A. I was twenty-one.
Q. Where is your business?
A. On Staten Island.

By plaintiffs' counsel:

Q. What is the concern you are with?
A. Barrett, Nephews & Co.

By defendant's counsel:

Q. How long have you been in the dyeing business?
A. Upwards of thirty years.
Q. Are you acquainted with aniline dyes and colors?

A. I am.
Q. How long have you been acquainted with them?
A. Ever since I have been in the business.
Q. That is, since you have been in the business—fifteen years—you have been acquainted with them?
A. Yes, sir.
Q. Do you know Pickhardt & Co.'s fast red naphthylamine roth echt?
A. Yes, sir.
248 Q. Have you used it?
A. Yes, sir.
Q. Have you purchased it from them?
A. Yes, sir.
Q. Do you know their orange II and orange IV?
A. Not as such from that house; it is called A and B.
Q. Have you bought orange A and B from them?
A. Yes, sir.
Q. Have you bought and used resorcine red?
A. We have.
Q. From them?
A. Yes, sir.
Q. What are those colors—resorcine red J, naphthylamine roth echt (fast red), and orange A and B?

Preliminary cross-examination by plaintiffs' counsel:

Q. Do you know how those colors are made?
A. I do not.
Q. Do you know anything about their composition?
A. I do not.

PLAINTIFFS' COUNSEL: I object to the question.
The COURT: He may answer.
PLAINTIFFS' COUNSEL: We except.

(The question last put by defendant's counsel was then read to the witness, and he answered as follows:)

A. We have always known them, always classed them, as aniline colors.

By defendant's counsel:

Q. Is that the way the trade understand them?
A. Yes, sir.
Q. To what was the term aniline dye or the term aniline color applied when you began in business?
A. To all those—Bismarck brown and magenta, and so forth.
249 Q. Mention some more of them that you recollect. Manchester yellow—do you remember that?
A. Not as early a date as that.
Q. What is that?
A. Not at that date, I do not.

PLAINTIFFS' COUNSEL: I don't hear what you say.

The WITNESS: I don't recollect it as early as I started in business.

By defendant's counsel:

Q. Name those that you do.
A. Those are the browns and some blues.

Cross-examination by plaintiffs' counsel:

Q. Who do you mean by "we" when you said we understood them to be aniline dyes?
A. The company with which I am employed—Barrett, Nephews & Co.
Q. You have never bought these colors from any one except Pickhardt & Kuttroff?
A. Which colors do you refer to?
Q. The colors that he inquired of you about—the naphthylamine red, the resorcine red J, and the orange A and B.
A. Yes, sir; I think we have.
Q. From what [whom] have you bought them?
A. From Lutz & Movin, is one house, and Read Holliday was another house.
Q. Under what names did you buy them?
A. As orange I, II, III, or I and II, II and IV.
Q. Under what name did you buy the fast red—the naphthylamine.
A. The fast red I don't think we got from any house except Pickhardt & Kuttroff, under the head of or as a benzole.
Q. Under the head of what?
A. As fast crimson—as a benzole or fast crimson.
250 Q. Don't you know of an azo-benzole fast crimson and fast red R and fast red R R and fast red R R R? Don't you know that they are different colors?

DEFENDANT'S COUNSEL: What sense do you use that in?
PLAINTIFFS' COUNSEL: Well, different dyes.

A. They are used very much the same.
Q. Do you understand or not that the azo-benzole fast crimson and the naphthylamine red, called the fast red, are different dyes?
A. I suppose they are a different dye, but their result is very much the same.
Q. What do you say?
A. Their result is very much the same.
Q. Do "we"—that is, you and your firm—call the azo-benzole fast crimson an aniline dye?
A. They always have been called so.
Q. By you?
A. Yes, sir.
Q. When did you use that fast red?
A. This past summer.
Q. Did you ever hear of naphthylamine red?
A. I have.

Q. When did you first hear of that?
A. Some two or three years ago.
Q. The fast red that you got from Pickhardt & Kuttroff came under a label similar to that (showing witness Plaintiffs' Exhibit No. 15)?
A. Yes, sir.
Q. When did your house first purchase it?
A. I couldn't say.
Q. You have no recollection of using it until last summer?
A. Not directly; no, sir.
Q. What did you get it for?
A. For to be used in dyeing wools.
251 Q. Well, what had you been dying such wools with before to get the same color?
A. Magentas and orange.
Q. Wasn't this dye represented to you as a new dye that would produce new effects?
A. Yes, sir.
Q. And that was the reason you got it, wasn't it?
A. It was.
Q. Did you ever hear of naphthylamine colors?
A. I have.
Q. What are those?
A. I don't know.
Q. You don't know?
(No answer.)
Q. Where did you first hear of them, and when?
A. I have heard of them for two or three years past.
Q. For two or three years past you have heard of naphthylamine colors?
(No answer.)
Q. And also of resorcine colors?
A. Yes, sir.
Q. A longer time than that. Wasn't it more than two or three years you have heard of resorcine colors?
A. I don't think I have.
Q. About two or three?
A. About two or three years.
Q. What are resorcine colors?
A. They are reds.
Q. Those were a new color, were they not?
A. Yes, sir.
Q. Have you heard the term azo colors?
A. Yes, sir.
Q. For about how long a time?
A. The same length of time—two or three years.
Q. You have heard of these terms in connection with your business as a dyer, haven't you?
A. I have.

Redirect by defendant's counsel:

Q. Have you understood these to be different colors from aniline colors or different varieties of aniline?
A. Different varieties of aniline colors.

252 Recross by plaintiffs' counsel:

Q. You supposed they were all made from aniline?
A. I have no idea how they were made; I never questioned it.
Q. Did you ever hear of phenol colors?
A. I have.
Q. Did you suppose that was a variety of aniline colors?
A. I never knew anything about how it was made.
Q. Did you understand that to be a variety of aniline colors?
A. I did.
Q. Did you know phenol colors existed before aniline was discovered?
A. I don't know.
Q. Do you know picric acid as an aniline dye?
A. I should not.
Q. Do you know what it is?
A. I do not; no, sir.
Q. Do you know whether it is a phenol color or not?
A. I do not.

HENRY B. THOMPSON, being duly sworn and examined as a witness on behalf of the defendant, testified:

By defendant's counsel.

Q. What is your business?
A. I am superintendent of the Quaker City Dye Works.
Q. Where are those dye works?
A. In Philadelphia.
Q. How long have you been so?
A. I was there for three years, then left it; came back again, and I have been there for three years since. I was one year in the Pacific Mills, at Lawrence.

253 Q. Does that concern use aniline dyes?
A. Yes, sir.
Q. Has it all the time that you have been with it?
A. Yes, sir.
Q. You have been acquainted with aniline dyes during that time?
A. Yes, sir.
Q. Have you ever had any other acquaintance with them?
A. No, sir.
Q. Except as you have been there?
A. Excepting from practical use of them.
Q. Do you know Pickhardt & Kuttroff's naphthylamine roth echt?
A. Yes, sir.

Q. Their orange II and IV?
A. Yes, sir.
Q. Their resorcine red J?
A. Yes, sir.
Q. State whether or not they are aniline dyes.
A. We regard them as such.
Q. State, if you know, whether the trade so regards them.

(Objected to.)

Q. Do you know?
A. I did not hear your last question.
Q. State, if you know, whether the trade regards them as aniline dyes.

(Objected to.)

A. I do; yes, sir.

PLAINTIFFS' COUNSEL: I want to cross-examine him as to being an expert.

Preliminary cross-examination by plaintiffs' counsel.

Q. You have never been a dealer in dyes?
A. No, sir.
Q. And, as you just said, your experience in respect to dyes has been in the works in Philadelphia?
A. Yes, sir.
Q. And at the Pacific Mills, in Lawrence?
A. Well, I buy the dyes; I buy them for our firm.
254 Q. You buy them for your firm in Philadelphia?
A. Yes, sir.
Q. And only for them?
A. Yes, sir.
Q. And for how long have you bought them?
A. Three years.
Q. Of whom have you bought them?
A. For the Quaker City Dye Works.
Q. You buy them for your firm in Philadelphia?
A. Yes, sir.
Q. And only for them?
A. Yes, sir.
Q. And for how long have you bought them?
A. Three years.
Q. Of whom have you bought them?
A. For the Quaker City Dye Works.
Q. Of whom have you bought them?
A. Most all the aniline firms.

PLAINTIFFS' COUNSEL: I renew my objection, that the witness is not an importer.

The COURT: We will admit the evidence.

(Plaintiffs' counsel excepts.)

Direct examination resumed by defendant's counsel:

Q. (Repeated.) Does the trade so regard them?

DEFENDANT'S COUNSEL: As aniline dyes?

A. Yes, sir.

Q. Do you know what are regarded in trade among anilines as fastest—that is, as to the relative position of them in respect to fastness? In the scale of dyes arranged according to fastness, how would the dyes stand?

A. Do you mean these colors in question?

Q. No; I mean aniline colors in general, including these.

A. As a rule, we do not consider them fast.

255 Q. What would be standing at the head of a list in a scale arranged on that principle?

A. It depends upon what you mean by "fast"—fast to light or scouring.

Q. Does the trade have any meaning for fast?

A. I do not think they have.

Q. They say fast to light or fast for scouring, or something of that sort; take it fast to light.

A. I generally consider the Nicholson blues as fast as any colors there is, for light.

Q. How about fast for scouring—soap?

A. Well, the naphthaline blues are fast for scouring.

Q. They are what you consider the fastest?

A. Yes; but they are not fast to light.

Cross-examined by plaintiffs' counsel:

Q. You have bought this naphthylamine red?

A. Yes, sir.

Q. And used it?

A. Yes, sir.

Q. When did you first begin to use it?

A. I don't remember the exact date; soon after it appeared upon the market.

Q. About 1879 or 1881; somewhere along there?

A. Well, we used it in 1879. It was within a month after it was imported, as far as I know of.

Q. What colors did you use it to produce?

A. To produce cardinals or reds.

Q. Reds on the scarlet side?

A. Yes, sir.

Q. What dyes had you used prior to that to produce those colors?

A. Magenta, Bismarck brown——

Q. Anything else?

A. Cochineal.

Q. How about the colors produced by naphthylamine red?

A. We use cochineal.

256 Q. You did use cochineal?

A. Yes.

Q. Look at the darker of those two reds (Plaintiffs' Exhibit 2). Can you produce that color with Bismarck brown?

A. Yes, sir—that is, Bismarck brown in company with magenta; that is the way we find them.

Q. Oh, it was a combination of colors?

A. Yes, sir.

Q. Then you did not produce those colors with any one dye, or did you with any one dye; did you with cochineal?

A. I suppose cochineal in sufficient quantities would produce that.

Q. Cochineal in sufficient quantities would produce that color?

A. So far as I know, I think it would.

Q. Well, do you know any other single dye that would produce that color, aside from cochineal and naphthylamine?

A. No; I do not.

Q. Have you ever made any experiments as to the fastness of this color?

A. Yes, sir.

Q. What experiments?

A. Scouring and fulling dyes.

Q. How do they stand scouring and fulling?

A. Well, they stand up to a certain point and then they begin to bleed—that is, the color begins to disappear.

Q. Have you experimented with them as to light?

A. Yes, sir; we found that they are not as fast to light as some other reds.

Q. What other reds?

A. Cochineal we consider the standard.

Q. What other reds are faster than these?

A. I don't know of any.

Q. You don't know of any? What other reds are faster to light?

A. Well, I think—no; I don't know of any.

257 Q. That mixture of magenta and Bismarck brown that you speak of won't stand acid?

A. I beg your pardon.

Q. Will that mixture of magenta and Bismarck brown that you speak of stand acid?

A. No, sir.

Q. Will it stand fulling?

A. It does not stand fulling.

Q. Can you get these shades of color from the mixture of Bismarck brown and magenta?

A. Yes, sir.

Q. Have you got any samples?

A. No, sir; I have samples, but not with me. We dye them at present with acid magenta and orange; that is the way they were originally produced—with Bismarck brown and magenta entirely—that is, by our firm.

Q. That was the color on a crimson rather than a scarlet shade of red, wasn't it?

A. We could produce any shade from a scarlet to a garnet.

Q. Under what name did you buy these dyes of the plaintiffs? The fast red, under what name did you buy that?

A. We buy it as fast red.

Q. And the packages come labelled?

A. Yes, sir.

Q. (Handing the witness Defendant's Exhibit No. 15.) How are they labelled?

A. I suppose they are about the same as this—fast red R, it is printed; I don't know R R at all.

Q. With that word "naphthylamine" on them?

A. Yes, sir.

Q. What kind of an idea did that convey to your mind when you saw it on them?

A. None.

Q. They were introduced as a new color, were they not, when you first saw them?

A. Yes, sir.

Q. Did you ever hear the term "azo" used before this trial?

258 A. I could not say I have heard it used; I don't think I have; I have come across it in reading.

Q. What idea does that convey to your mind?

A. It does not convey any.

Q. It never conveyed any idea to your mind in respect to these dyes producing these colors?

A. No, sir; not in connection with the dyeing qualities.

Q. Did you ever hear of anthracene colors?

A. Yes, sir.

Q. Does that convey any idea to your mind?

A. No, sir.

Q. Any phenol colors?

A. I have heard of them; yes, sir.

Q. Does that convey any idea to your mind?

A. Well, merely—I should not say it conveys no idea. I merely know them as classes, but I do not know what the chemical properties of those colors are.

Q. Well, then, you have known them as classes or colors?

A. Yes, sir.

Q. And you saw azo dyes advertised in the paper, didn't you?

A. I didn't hear your question.

Q. You saw azo dyes and colors advertised?

A. Yes; I have.

Redirect by defendant's counsel:

Q. You say "classes of colors," you mean classes of anilines?

A. Classes of aniline; yes.

Q. Well, fuchsine?

A. Yes.

By plaintiffs' counsel:

Q. That was the idea that was conveyed to your mind that was suggested by the district attorney; is that what you mean to say?

A. I beg your pardon.

PLAINTIFFS' COUNSEL: That is all.

259 In the course of the trial a large amount of testimony was introduced on behalf of both parties as to the similitude or resemblance under Revised Statutes, section 2499, of the dyes and colors of the plaintiffs' importations and various dyes and colors known in trade of this country and by chemists from 1869 to time of trial as aniline dyes and colors, it being contended upon the part of the defendant that the importations of the plaintiffs, if not specified under and covered by the term aniline dyes, yet that they were chargeable as aniline dyes by similitude.

The court then charged the jury as follows:

WHEELER, *J.*:

GENTLEMEN: The plaintiffs in this suit, as you know, claim to recover those sums of money paid to the defendant, who was collector of the port of New York, because these sums were illegally exacted by the defendant, as collector, from the plaintiffs; and they claim to recover on the ground that this money belongs to the plaintiffs and not to the defendant; that the plaintiffs are entitled to have the money returned to them because it was unlawfully exacted from them by the defendant as collector.

The question is whether the money was lawfully or unlawfully exacted from the plaintiffs upon these classes of goods as imports into the port of New York. There are four different articles in question shown by these four samples introduced on the
260 trial. They are known as the resorcine red J, naphthylamine red, orange II, and orange IV—that is, these two reds and these two oranges. The collector levied a duty upon these articles as aniline dyes or colors, or as articles bearing a similitude to aniline dyes or colors. The plaintiffs claim this is wrong; that he has exacted too much; that they were subject to another duty.

The question is whether the collector was wrong or right—a question for you to determine.

Upon this proof it appears that substances known as aniline dyes began to be known or found out—invented and began to be known and come into use—about 1859 or 1860 or 1861; that they had not been known before; that they were used to some extent, as the evidence shows you, from time to time and in different ways up to the year 1864, and still further along until 1870, and still more up to 1874.

Congress enacted a law in regard to them in 1864; it enacted another and little different law in 1870; it re-enacted the law of 1870 in 1874 in the same terms.

In 1864 Congress used the term aniline dyes in subjecting articles to duty. Now, Congress passed that law for the guidance of the collectors of the different ports of entry and of merchants and importers dealing in such articles, and used the word as it was known among such persons in the ports of this country at that time—that

is, in 1864, in using the term aniline dyes, Congress meant articles and substances which were known by that name among merchants and importers in the ports of the United States in 1864, when they used the word.

261 In 1870 they added a little. They said "aniline dyes, by whatever name known." Now, we have to look at the evidence to see what they meant then; what had been known under the name aniline dyes up to that time—what substances—not among chemists and scientific men merely, but among this class of people to whom this part of the legislation of Congress is addressed—that is, dealers in colors, importers, and those to whom this law would apply. Now, whatever substance had been known as aniline dyes in that way up to that time were kept along and not detracted from, because the same things had come to be known by different names—that is, Congress applied this law to the same subjects as before and "by whatever name known."

They continued that again in 1874—the same language and in the same sense.

If those articles or either of them—these four articles—would (according to the understanding of that class of men—that is, commercial men—dealers in these articles, importers of these articles in this country) be included in the class of articles known as aniline dyes, by whatever name they had come to be known at the time in question, then they were subject to the duty of aniline dyes. You see that is quite a plain question upon this evidence.

What was known as aniline dyes in 1870 and 1874, in June, at the time this act of Congress took effect, as a class of articles which had acquired that name by reputation and use among dealers and importers in that kind of articles?

262 The evidence tells you what. You have heard all the evidence in the case bearing on that subject and all the witnesses as to what was then known; they have told you.

Congress used this term aniline dyes as applied to the class. They did not specify any particular thing, any one of those blues or reds or oranges; they did not say that; but they said aniline dyes, meaning what would be known among this class of persons as aniline dyes. That tells us what the class was. The law was made for the future in 1870 and again in 1874.

Now if these articles—these four articles—all of them, fall within that class generally, then the defendant is entitled to a verdict; the plaintiffs are not entitled to recover; the duty was probably [properly] assessed.

If they don't, or either of them does not, then there is another consideration about it.

The law provides that if articles are not enumerated in the particular list—that is, if they are non-enumerated articles, they shall bear the same duty—they shall then be subject to the same duty as articles to which they bear a similitude would, either in "material, quality, texture, or the use to which it may be applied." If those do not fall within the class of aniline dyes, then the question will be whether they bear a similitude to the articles which are in that

class or which were in that class at the time when these laws were passed, in either of these respects. If they do, then they were dutiable the same as aniline dyes were.

263 Now take these respects. Perhaps the word "texture" does not apply to this subject, so we will lay that out. But "material;" Congress says if they bear a similitude either in material, quality, or the use to which they may be applied they shall bear the same duty. Now then, if those articles or either of them bear a similitude to what were known as aniline dyes, at the time of the passage of the act, in "material"—that is the word used by Congress—if these bear a similitude in material, they are dutiable. Congress uses the word again, expressing the same idea—resemblance. Is there a resemblance? Do they bear a similitude in material? That is, are these articles or either of them composed of the same material that aniline dyes are composed of, in whole or in part? If so, then they bear a similitude—they would bear a similitude in material. Quality—a similitude in quality. Are these articles or either of them of the same quality, on all the evidence in this case? You have heard it all, and I shall not try to repeat any of it to you. Do these articles or either of them bear a similitude in quality to the dyes known as aniline dyes when this law was passed? If they do, then they are dutiable. In quality are they alike? Do they resemble one another? Are the qualities the same? That is the question. If they are, then they bear a similitude, and they are dutiable. If either of them does, it is so. Then again, as to the "use to which it may be applied." Is there are [any] similitude in use? We have had a great deal of evidence as to what aniline dyes were in use in 1864. But the proper

264 time to look at particularly is 1870 and 1874, as to what aniline dyes were known then and in use, and what their uses were—what uses they were applied to. Are they applied in the same way—do they bear a similitude in the uses to which they may be applied or either of them?

Well, now; they were applied to dyeing fabrics. These are applied to dyeing. Perhaps that similitude is too far off. I think it is in that wide sense; but in mode of use, similitude in the same kind of dyeing, producing the same colors in substantially the same way so as to take the place in use. If they do, why then, I think, they bear a similitude in use, and so instruct you.

If these articles are either aniline dyes or bear a similitude to aniline dyes in either of these respects—all of these articles, all four of them—then the defendant is entitled to a verdict.

If they are neither aniline dyes and do not bear a similitude, then the plaintiffs are entitled to a verdict for the full amount. If neither of them is not and does not bear a similitude, or any less than all of them, then the plaintiffs are entitled to a verdict as to those for the amount of duties that were charged which ought not to be charged.

In view of a suggestion made in the argument, I will say to you that, with reference to this question of similitude, some allusion has been made to the free list, and I desire to say to you that the plain-

tiffs could not have articles classed as free on account of any similitude which they bear to articles on the free list at that time. You are not to look there for similitudes. You need not
265 trouble yourselves about any similitude, except a similtude to aniline dyes. You need not take any care about the free list in any way. This is the article, "aniline dyes or colors, by whatever name known." We will look at that on all the evidence in this case and see if these articles fall within that description as commercially known, or bear a similitude to the articles which fall within that description as they were known in 1870 and 1874.

And on suggestion I will state to you that in considering this subject you are not to consider aniline dyes as a term synonymous with "coal-tar dyes." Congress did not use the term "coal-tar dyes;" they used the term "aniline dyes," and so you are to look at the term aniline dyes as such, and as shown to be by this commercial usage at that time, and particularly at those times—1870 and 1874.

Something has been said about the burden of proof. In this class of cases the burden of proof rests upon the plaintiffs to fairly satisfy you by evidence that these duties were wrongly exacted—that is, the plaintiffs are under the necessity of producing evidence which fairly preponderates in your mind in favor of the view that the defendant, as collector, was wrong in exacting the duties which he did exact—that is, the plaintiffs must show to you by a fair preponderance of evidence that these were neither aniline dyes nor bore any resemblance to them in the particulars which I have pointed out. That preponderance of evidence means merely this: that it must make your minds incline that way on the proof—that is, look at this question as to whether these fall within the
266 class of aniline dyes. If you more think that they do not than that they do, then the plaintiffs have sustained that burden, have brought proof enough; but if you are exactly even in your minds, then the case must turn for the defendant, because the plaintiffs have not made out by a preponderance of evidence in their favor the fact that it was incumbent upon them to make out by evidence. And just so as to the resemblance. And that is all there is as to the burden of proof in a civil case, which this is. Plaintiffs must make out their case fairly; that is all there is to it.

Something has been said about the justice or the injustice of these exactions of the tariff. Perhaps it is not necessary to remark to you that that is a subject about which we have no concern whatever. It is nothing to us; we do not make the law; Congress makes the law; they impose just such duties as they please and on just such articles as they please. Those who import must pay them. If they prefer not to import and pay them they must not import. We cannot help them either way. We have to take the law just as it is—just as they make it. If within the law as Congress made it these goods are not dutiable as defendant assessed duties upon them, and the defendant compelled the plaintiffs to pay too much, they are entitled to recover it back. If not, if the collector was right or is

not shown to be wrong, then the Government is entitled to retain the money.

You may take the case, and I shall desire to know if you find any one of these articles to be dutiable and the others not. If you do, then there are different sums; and here
267 is a memorandum made by the stenographer, showing how much the plaintiffs claim to have been illegally exacted upon each one of the imports. If you return a verdict for the plaintiffs as to all of them, why, you won't, of course, need to trouble yourselves as to any items. They do not stand on precisely the same evidence, all of them. They are not all alike, and you may think that the plaintiffs are entitled to recover back as to some or as to all, or you may not think so—but if you do think so, this memorandum will tell you the amount; that is, as to the resorcine red, $176 p.; as to the orange IV, $103.98. Now, if you return a verdict as to any of these articles, and not as to all, in favor of the plaintiffs, be prepared when you come in with your verdict to tell which article and how much, so that the proper record may be made, and you can take this paper.

PLAINTIFFS' COUNSEL: If the court please, I desire to except to the refusal of the several requests that we made, except two, which the court has charged. To each of them separately, except so far as the court has charged, we desire to except as to each of them.

The COURT: Yes, sir.

PLAINTIFFS' COUNSEL: And I also desire to except to that portion of your honor's charge after where your honor stated that the term aniline dyes was used in 1864 as it was known among merchants; to that portion following, that commences: "That when Congress, in the year 1870, added the words, 'by whatever name known;' that whatever substances were included then were kept along, and not detracted from or added to." That portion that com-
268 mences there and referring to this subject.

And, again, to that portion of the charge where the same idea is referred to in relation to the act of 1874.

Also to that portion of your honor's charge commencing: "That is [if] these articles, in 1874, in this country, be included in the class of articles then dutiable as aniline dyes, they are dutiable as aniline dyes;" and particularly excepting to it in connection with the subsequent statement that the law of 1874 was made for the future, and including all dyes which might be subsequently known in that class; and particularly, also, to that portion of the charge in which your honor stated that Congress (and the ground in that connection) used this term as applied to the class.

And to that portion also of the charge in which your honor says: "If they fall within that class of aniline dyes the defendant is entitled to a verdict."

Also to the charge upon the similitude portion of the act; to that portion of your honor's charge in reference to the word "material."

Also to that portion of the charge relating to the similitude in the same kind of dyeing.

The COURT: As to uses?

PLAINTIFFS' COUNSEL: As to uses. I also desire to make an addition to the requests previously handed up to your honor. I request your honor to charge the jury, in respect to similitude of quality, that the mere quality of producing color is not a sufficient similitude to warrant the jury in finding a verdict by reason of similitude.

269 The COURT: Well, I don't know exactly what the practice is here about receiving a request at this time; but, without making any question as to that now, I will hear it.

PLAINTIFFS' COUNSEL: It is in accordance with the practice as we have been accustomed to it.

The COURT: I will follow that practice. Won't you repeat that request?

PLAINTIFFS' COUNSEL: I ask your honor to charge the jury, in respect to similitude of quality, that the mere quality of producing color, or dyeing, is not a sufficient similitude to warrant the jury in finding a verdict for the defendant by reason of similitude.

The COURT: I think I have told the jury that—that is, that the mere fact that it colors is not a similitude. I think I told them that.

PLAINTIFFS' COUNSEL: I also request your honor to instruct the jury that if all or any of these dyes—that if they should find upon a fair preponderance of testimony that they were used as a substitute and in place of cochineal, and not as a substitute for any aniline dye known at the time of their introduction, the plaintiffs on that branch of the case are entitled to a verdict.

The COURT: I will leave that as I have. I think the general instruction to the jury is sufficient.

Plaintiffs' counsel excepted, and the exception was duly allowed.

Thereupon counsel for plaintiffs excepted to the charge, as follows:

"In 1870 they added a little. They said 'aniline dyes, by
270 whatever name known.' Now, we have to look at the evidence to see what they meant then, what had been known under the name of aniline dyes up to that time—what substance—not among chemists and scientific men merely, but among this class of people to whom this part of the legislation of Congress is addressed—that is, dealers in colors, importers, and those to whom this law would apply. Now, whatever substances had been known as aniline dyes in that way up to that time were kept along and not detracted from, because the same things had come to be known by different names—that is, Congress applied this law to the same subjects as before and 'by whatever name known.'"

To the above-quoted portion of the charge counsel for plaintiffs excepted, and the exception was duly allowed.

"They continued that again in 1874; the same language and in the same sense."

To the above-quoted portion of the charge counsel for the plaintiffs excepted, and the exception was duly allowed.

"If those articles or either of them—these four articles—would (according to the understanding of that class of men—that is, com-

mercial men, dealers in these articles, importers of these articles, in this country) be included in the class of articles known as aniline dyes, by whatever name they had come to be known at the time in question, then they were subject to the duty of aniline dyes. You see that is quite a plain question upon this evidence."

To the above-quoted portion of the charge counsel for plaintiffs excepted, and the exception was duly allowed.

271 "What were known as aniline dyes in 1870 and 1874, in June, at the time this act of Congress took effect, as a class of articles which had acquired that name by reputation and use among dealers and importers in that kind of articles."

To the above-quoted portion of the charge counsel for plaintiffs excepted, and the exception was duly allowed.

"Now, if these articles—these four articles, all of them—fall within that class generally, then the defendant is entitled to a verdict; the plaintiffs are not entitled to recover. The duty was properly assessed."

To the above-quoted portion of the charge counsel for plaintiffs excepted, and the exception was duly allowed.

"Now, then, if those articles or either of them bear a similitude to what were known as aniline dyes, at the time of the passage of the act, in 'material'—that is the word used by Congress—if these bear a similitude in material, they are dutiable. Congress uses the word again, expressing the same idea—resemblance. Is there a resemblance? Do they bear a similitude in material? That is, are these articles or either of them composed of the same material that aniline dyes are composed of, in whole or in part? If so, then they bear a similitude; they would bear a similitude in material."

To the above-quoted portion of the charge counsel for plaintiffs excepted, and the exception was duly allowed.

"Then, again, as to the 'use to which it may be applied.' Is there any similitude in use? We have had a great deal of evidence as to what aniline dyes were in use in 1864; but the proper time to look at particularly is 1870 and 1874, as to what aniline

272 dyes were known then and in use, and what their uses were—what uses they were applied to. Are they applied in the same way. Do these bear a similitude in the uses to which they may be applied or either of them?"

"Well, now, they were applied to dyeing fabrics. These are applied to dyeing. Perhaps that similitude is too far off. I think it is, in that wide sense. But in mode of use, similitude in the same kind of dyeing producing the same colors in substantially the same way, so as to take the place in use—if they do, why then I think they bear a similitude in use, and so instruct you."

To the above-quoted portion of the charge counsel for plaintiffs excepted, and the exception was duly allowed.

Thereupon plaintiffs' counsel requested the court to charge—

"That the term aniline dyes and colors, by whatever name known, is not used in a general commercial sense, but as a descriptive term, and primarily includes only such dyes as are in fact aniline by their constitution."

The court declined so to charge, and to the refusal of the court to charge specifically as requested plaintiffs excepted, and the exception was duly allowed.

"That, in determining the question at issue, to instruct the jury to disregard all the testimony of the defendant as to the general name under which the articles in question were bought and sold."

The court declined so to charge, and to the refusal of the court to charge specifically as requested plaintiffs excepted, and the exception was duly allowed.

273 "That it is immaterial how the articles in question were regarded in trade, and that the plaintiffs are entitled to a verdict if they are satisfied, upon a fair preponderance of testimony, that the dyes in question are a new and different dye from the aniline dyes known in 1874, and are not in fact aniline dyes, unless the jury should find similitudes under the statute."

The court declined so to charge, and to the refusal of the court to charge specifically as requested plaintiffs excepted, and the exception was duly allowed.

"If the jury find that the plaintiffs' goods were not known in commerce until since June, 1874, the plaintiffs are entitled to recover, unless the jury find they bear the statutory similitude to the aniline dyes and colors known in 1874."

The court declined to charge otherwise than as already charged; to which ruling plaintiffs excepted, and the exception was duly allowed.

"That in considering the question of similitude the jury are to consider all the evidence as to similarity and dissimilarity, and that fastness, cheapness, freedom from poison, ease of use, and particularly capacity to produce a particular color, are all to be taken into account."

The court declined to charge otherwise than as already charged; to which ruling plaintiffs excepted, and the exception was duly allowed.

"To instruct the jury that the term aniline dyes in the statute is not synonymous with coal-tar dyes, and that on the uncon-
274 tradicted evidence in this case there were in 1870 and 1874 coal-tar dyes and colors which were not aniline dyes and colors."

The court declined to charge otherwise than as already charged; to which ruling plaintiffs excepted, and the exception was duly allowed.

"If the court rules that the term 'aniline dyes and colors, by whatever name known,' is used in its commercial sense, then it does not apply to the goods in question if the jury find upon a fair preponderance of testimony that they are a new article, not known to commerce, at the time of the passage of the act."

The court declined to charge otherwise than as already charged; to which ruling plaintiffs excepted, and the exception was duly allowed.

"That in determining the question whether the dyes in question are commercially aniline dyes the jury are to take into consideration

only the evidence of those witnesses who testify from knowledge of actual mercantile transactions in respect to the goods in controversy."

The court declined to charge otherwise than as already charged; to which ruling plaintiffs excepted, and the exception was duly allowed.

"To instruct the jury that in determining the question of similitude they are to limit themselves to a comparison of the plaintiffs' dyes with the aniline dyes known in and prior to June, 1874."

The court declined to charge otherwise than as already charged; to which ruling plaintiffs excepted, and the exception was duly allowed.

275 Plaintiffs' counsel also requested the court to charge as follows:

I also request your honor to instruct the jury that if all or any of these dyes—that if they should find upon a fair proponderance of testimony that they were used as a substitute and in place of cochineal and not as a substitute for any aniline dye known at the time of their introduction, the plaintiffs on that branch of the case are entitled to a verdict.

The COURT: I will leave that as I have. I think the general instruction to the jury is sufficient.

To the refusal of the court to charge specifically as requested plaintiffs' excepted, and the exception was duly allowed.

And inasmuch as the matters aforesaid do not appear upon the record or otherwise than by this bill of exceptions, on the prayer of the said plaintiffs, by their counsel, the said judge has to this bill of exceptions put his hand as of the 6th day of February, A. D. 1884.

(Signed) HOYT H. WHEELER.

276 [Endorsed:] No. 5798. U. S. circuit court, so. dist. of N. Y. Wilhelm Pickhardt & ano. *vs.* Edwin A. Merritt. Bill of exceptions. C. Bainbridge Smith, attorney for plaintiffs; S. G. Clarke, of counsel. U. S. circuit court. Filed Jan. 8, 1886. Timothy Griffith, clerk.

277 United States Circuit Court, Southern District of New York.

WILHELM PICKHARDT and ADOLF KUTTROFF
against
EDWIN A. MERRITT. } 5798.

It is hereby consented that the plaintiffs deposit with the clerk of this court, in lieu of a bond for damages and costs, the sum of five hundred dollars as security on the writ of error from the judgment entered in this action on the 4th day of May, 1886, in favor of defendant for $222.45, and that upon such deposit being made an

order may be made staying all proceedings on said judgment until the hearing and decision of said writ of error.

New York, July 2nd, 1886.

(S'g'd) STEPHEN A. WALKER,
U. S. Attorney & Att'y for Def't.
(H. C. P.)

(Endorsed:) U. S. circuit court. Wilhelm Pickhardt & ano. ag'st Edwin A. Merritt. Consent & order allowing deposit. C. Bainbridge Smith, pl'ffs' att'y, N. Y. city.

278 (File-mark:) U. S. circuit court. Filed July 9, 1886. Timothy Griffith. clerk.

279 United States Circuit Court for the Southern District of New York.

WILHELM PICKHARDT and ADOLF KUTTROFF *ag'st* EDWIN A. MERRITT. } 5798.

On reading and filing the consent that the plaintiffs may deposit the sum of $500.00 in lieu of a bond for damages and costs, now, on motion of C. Bainbridge Smith, attorney for plaintiffs, it is ordered that the plaintiffs deposit the sum of $500.00, in lieu of a bond for damages and costs, with the clerk of this court as security on the writ of error from the payment rendered in favor of defendant on the 4th day of May, 1886, and that upon such deposit being made all proceedings upon said judgment be, and the same are hereby, stayed, pending the hearing and decision of said writ of error.

Dated N. Y., July 8th, 1886.

(S'g'd) WM. J. WALLACE.

280 United States Supreme Court.

WILHELM PICKHARDT and ADOLPH KUTTROFF, Plaintiffs in Error, *vs.* EDWIN A. MERRITT, Late Collector of the Port of New York, Defendant in Error.

Afterwards, to wit, on the second Monday of October term, 1886, before the justices of the said Court, at the Capitol, in Washington, come the said plaintiffs in error, by C. Bainbridge Smith, their attorney, and say that in the record and proceedings aforesaid there is manifest error, in this, to wit, that by the record aforesaid it appears that the judgment aforesaid, in form aforesaid, was given for the said defendant in error against the said plaintiffs in error, whereas by the law of the land the said judgment ought to have been given for the said plaintiffs against the said defendant.

2. That there was error in refusing to direct a verdict for the plaintiffs.

281 3. The plaintiffs in error further assign for error the several pleadings, instructions, and refusals to instruct, admission of

testimony and refusals to admit, the charge and refusals to request to charge, which were by them made grounds of exception upon the trial, as by the bill of exceptions in this record appears.

And the said plaintiffs pray that the judgment aforesaid, for the error aforesaid and other errors in the record and proceedings aforesaid, may be reversed, annulled, and altogether held for nothing, and be restored to all things which they have lost by occasion of said judgment, &c., &c.

——— ———,
Attorney for Plaintiffs in Error.

(Endorsed:) U. S. Supreme Court. Wilhelm Pickhardt *vs.* Edwin A. Merritt, late collector of the port of New York. Assignment of errors. C. Bainbridge Smith, attorney for plaintiff, 94 Liberty St., New York city. U. S. circuit court. Filed Sep. 10, 1886. Timothy Griffith, clerk. Due service of a copy of the within is hereby admitted. N. Y., Sept. 10th, 1886. (S'g'd) Stephen A. Walker, att'y for def't in error.

282 Supreme Court of the United States.

WILHELM PICKHARDT & ADOLPH KUTTROFF, Plaintiffs in Error,
vs.
EDWIN A. MERRITT, Defendant in Error. } Joinder in Error.

And afterwards, to wit, on the second Monday of October in said term, the said defendant in error, by Stephen A. Walker, his attorney, comes here into court and says that there is no error, either in the record or proceedings aforesaid or in the giving of the judgment aforesaid.

And he prays that the said Supreme Court, before the justices thereof, now here, may proceed to examine as well the record and proceedings aforesaid as the matters aforesaid above assigned for error, and that the judgment aforesaid, in form aforesaid given, may be in all things affirmed, &c.

(S'g'd) STEPHEN A. WALKER,
Attorney for Def't in Error.

283 (Endorsed:) United States Supreme Court. Wilhelm Pickhardt & Adolph Kuttroff, pl'ffs in error, *vs.* Edwin A. Merritt, def't in error. Joinder in error. Stephen A. Walker, attorney for def't in error. Due service of a copy of the within is hereby admitted this 10 day of September, 1886. (S'g'd) C. Bainbridge Smith, attorney for plaintiffs in error. U. S. circuit court. Filed Sept. 10, 1886. Timothy Griffith, clerk.

284 UNITED STATES OF AMERICA, *ss:*

To Edwin A. Merritt, Greeting:

You are hereby cited and admonished to be and appear at a Supreme Court of the United States, to be holden at Washington on the second Monday of October next, pursuant to a writ of error filed in the clerk's office of the circuit court of the United States for the southern district of New York, wherein Wilhelm Pickhardt and Adolf Kuttroff are plaintiffs and you are defendant in error, to show cause, if any there be, why the judgment in the said writ of error mentioned should not be corrected and speedy justice should not be done to the parties in that behalf.

Witness the Honorable Morrison R. Waite, Chief Justice of the Supreme Court of the United States, this 8th day of July, in the year of our Lord one thousand eight hundred and eighty-six, and of the Independence of the United States the one hundred and tenth.

WM. J. WALLACE.
Circuit Judge.

285 [Endorsed:] Supreme Court of the United States. 5798. Wilhelm Pickhardt & ano. ag't Edwin A. Merritt. Citation. C. Bainbridge Smith, att'y for pl'ffs, 94 Liberty street, New York city. Due service of within is hereby admitted. N. Y., Aug. 3d, 1886. W. S. J. A copy of the within paper has been this day received at this office. Aug. 3, 1886. Stephen A. Walker, U. S. attorney.

[Stamped:] U. S. circuit court. Filed Aug. 6, 1886. Timothy Griffith, clerk. Received, U. S. attorney's office, Aug. 3, 1886.

Endorsed on cover: S. New York C. C. U. S. No. 97. Wilhelm Pickhardt and Adolf Kuttroff, plaintiffs in error, *vs.* Edwin A. Merritt, late collector of the port of New York. Filed September 29, 1886.

Office Supreme Court U. S.
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Supreme Court of the United States,

No. 97.

WILHELM PICKHARDT et al.,
Appellants,

vs.

EDWIN A. MERRITT, Late Collector, &c.,
Appellee.

BRIEF FOR APPELLANTS.

Supreme Court of the United States.

WILHELM PICKHARDT *et al.*,
Plaintiffs in Error,

vs.

EDWIN A. MERRITT, late Collector, etc.

The plaintiffs in error here, plaintiffs in the Court below, brought this action in the Circuit Court for the Southern District of New York, for the recovery of duties alleged to have been illegally collected on the following imports, viz.:

Naphthylamine Red.
Orange II.
Orange IV.
Resorcin Red J.

The date of entry at the Custom House was in January and February, 1879.

The Collector assessed duty upon all of them at the rate of 35 per centum *ad valorem*, and fifty cents per pound under the provisions of Paragraph 431, Schedule M, Section 2504, of the Revised Statutes of June 22, 1874, which is as follows:

"Paints and dyes.—Aniline dyes and colors, by whatever name known: fifty cents per pound, and thirty-five per centum *ad valorem*."

Plaintiffs paid the assessment under protest, claiming as a ground of protest that these articles were liable to

a duty of twenty per centum only, under Sec. 2516, Rev. Stat., which was as follows:

"Sec. 2516. There shall be levied, collected, and paid on the importation of all raw or unmanufactured articles, not herein enumerated or provided for, a duty of ten per centum *ad valorem;* and on all articles manufactured in whole or in part, not herein enumerated or provided for, a duty of twenty per centum *ad valorem.*"

Plaintiffs took appeals touching all the articles to the Secretary of the Treasury, who, by decision dated March 15, 1879, affirmed the assessment.

This suit was brought April 3, 1879.

Answer was filed averring that "said merchandise were dutiable according to the laws of the United States at the rates at which the same were assessed" (p. 8).

The suit came to a hearing January 29th, 1884, before Judge WHEELER and a jury.

Prior and subsequent Statutes.

The Act approved June 30, 1864, provided as follows:

Chap. 171, Sec. 11. "And be it further enacted, that on and after the day and year aforesaid (July 1, 1864), in lieu of the duties heretofore imposed by law on the articles hereinafter mentioned, there shall be levied and collected and paid on the goods, wares and merchandise enumerated and provided for in this section imported from foreign countries, the following duties and rates of duty, that is to say:

* * * * * *

"On aniline dyes, one dollar per pound and thirty-five per centum *ad valorem.*"

The Act taking effect December 31, 1870: Approved July 14, 1870, provided as follows:

Chap. 255, Sec. 21. "On aniline dyes and colors

by whatever name known fifty cents per pound and thirty-five per centum *ad valorem*."

Pieric acid was put on the free list.

In the Revised Statutes of June 22, 1874, the provision was modified to read as follows :

Sec. 2504, Schedule M. "431. Paints and dyes—Aniline dyes and colors, by whatever name known : fifty cents per pound, and thirty-five per centum *ad valorem*."

By the amendment of March 3, 1883, now in force the provision was modified to read as follows :

Sec. 2502, Schedule A. "82. All coal tar colors or dyes, by whatever name known and not specially enumerated or provided for in this act, thirty-five per centum *ad valorem*."

The coal tar dyes or colors specially enumerated were only artificial alizarine.

Pieric acid, which had been previously specially enumerated, in the free list, was by this amendment stricken out and has been held, together with resolic acid (previously also classed in the free list), to come under the general heading, coal tar dyes or colors.

Evidence on the trial.

The record discloses the following witnesses for the plaintiff :

Wm. Pickhardt, who gives, from a commercial standpoint, the history of the introduction into this country of the various artificial or coal tar dyes and colors.

Dr. Chas. F. Chandler, Dr. John M. Ordevay, and Dr. Henry Morton, who give the characteristics physically and chemically of the typical aniline dyes and colors as well as of the colors here in question, and also the substances from which the various artificial dyes were made and the dates when each was discovered and was introducud into commerce.

Defendant introduced the testimony of dealers who (without any pretense or knowledge as to the nature or derivation of the substances) said that they were, in the trade, arbitrarily called "aniline dyes," and that at the time the act in question was passed the term "aniline dyes" had been applied in trade to all colors derived from coal tar or artificial colors, with few exceptions.

Defendant's testimony did not tend nor seek to controvert the plaintiffs' testimony by which the following facts were established:

1. The dyes and colors here in question were of recent discovery, and none of them were known in commerce at the time the act was passed in June, 1874.

Naphthylamine Red first became known in 1878 (pp. 17, 28).

Rosorcin Red first became known in 1875 (pp. 22, 28).

Orange II. and IV. first became known in 1877 (pp. 17, 28).

2. Prior to 1864, when Congress first employed the term "aniline dyes and colors," that term must have been exclusively applied to the coal tar dyes or colors which were in fact derived from aniline and possessed the typical characteristic qualities of aniline dyes, of which fuchsine (rosaniline) was the most conspicuous and important example; because all of the coal tar dyes or colors then known were of that type (pp. 12 and 13), excepting pieric acid, which was the subject of special enumeration in the act.

3. Between 1864 and 1874 many new coal tar dyes or colors were discovered, some of which exhibited the constitution, characteristics and derivation of the typical aniline dyes; others of which did not; and still others of which were as yet uninvestigated and doubtful in that respect.

The chart at the end of this brief has been compiled from the testimony to illustrate at once the uncontradicted testimony as to the derivation of the various coal tar dyes and colors known in commerce up to 1874 and also those here in controversy, subsequently discovered. If, as a matter of fact, there were others known, they were of little importance and the testimony lays no particular stress upon them.

In reading this chart, it should be borne in mind that napthaline, anthracene, benzol and phenol exist in coal tar and are extracted therefrom. The other bodies are derived from these by chemical transformations. The evolution of any of the colors may be ascertained by following backwards the series of arrows connecting it with " coal tar."

Of course many of the dyes or colors given on this chart were subjeet to a great number of variations affecting their shade of color produced designedly in their manufacture often by the difference of a molecule more or less of one substance or another.

This chart shows that the evolution of neither Naphthylamine red nor Resorcin red passes through aniline. It also shows that the evolution of Orange II. passes through aniline only in one branch of its ancestry. This fact suggests that, if the term aniline dyes or colors refers exclusively to the derivation, Orange II. and Orange IV. might be included but Napththylamine red and Resorcin red excluded. This is one possible interpretation.

But the testimony of the witnesses for the plaintiff suggests another interpretation based upon the following facts, namely:

4. In the art, the authoritative classification of coal tar dyes and colors is and has been ever since the articles in question appared in commerce as follows (pp. 27–8, 79, 100):

Anthracine colors, such as artificial alizarine.

Phenol colors, such as pieric acid.

Diazo colors, such as napththylamine red, orange II. and orange IV.

Aniline colors, such as rosaniline.

Eosine or resorcin colors, such as resorcin red.

This classification has been recognized ever since the dyes in question were discovered and before they became commercially known since which time it seems to have come to be used more or less even among merchants. Thus, defendant's witness Heal, pp. 144–5, admits that while he had only heard of the colors in question for two or three years he had also in connection with his business as a dyer heard the term resorcin colors for two or three years, azo colors for the same length of time, and phenol colors. Defendant's witness Thompson also admitted having heard the terms anthracine colors, phenol colors and having seen azo colors advertised. Holliday also classed anthracine colors separately (p. 14).

In physical properties the class of diazo colors differs generally from the typical aniline colors as follows (referring particularly to pages 102–3, 80–1, 28–9).

Aniline Colors.	Azo Colors.
High tinctorial power compared with natural colors.	Tinctorial power no higher than natural colors.
Attach themselves to fabrics without manipulation easily and directly.	Attach themselves with more difficulty, being assisted by mordants.
Wanting in fastness.	Relatively fast.
Color, generally on the blue shades—either blues or violets or reds which contain blue or green.	Exactly the shades that aniline colors lack. Yellows and orange and yellowish reds.
Not fast to acids or alkalis.	Relatively fast to acids and alkalis. Sometimes even brightened or cleared by acids and alkalis.

Combine readily with albumen which is largely used as a mordant and in photographs.	Do not combine with albumen.
Not acid, unless sulphonated like Nicholson blue.	Always acid.

In constitution ; the class of aniline colors contains universally the radical amido-tri-phenyl-methane which is never found in the diazo colors (p. 100).

" The regular aniline dye was rosaniline and from that by substitutions and modifications were derived various aniline violets and aniline blues and aniline greens. These substances all exhibit the same general constitution. Chemically, they are all amido derivations of tri phenyl-melthane, and consequently they all belong together ; chemically, by their constitution, by their mode of preparation, by their origin, they belong together. Now, the azo dyes are totally different. It would be like confounding together in one group acids and alkalis " (p. 54).

The plaintiff's witnesses admitted that in two instances (in the cases of Bismarck Brown and Amido benzole yellow) dyes which upon investigation turned out to be possibly diazo dyes were upon their first introduction generally classed as aniline dyes, being sometimes called respectively Aniline Brown and Aniline Yellow. There was a good reason for this, however.

These two dyes were crude substances obtained from aniline residues. That is to say, when aniline was treated to produce rosaniline they had a quantity of liquid left which contained some rosaniline and all the impurities ; and from this residue the Bismarck Brown and Aniline Yellow were made. Not knowing what they were, they were put in along with the aniline colors (p. 52). Subsequently, two colors, apparently corresponding with these, were obtained from other sources, namely, amido-azo-benzole and tri-amido-azo-benzole,

the exact composition of which is not known, but which should probably be classed as azo colors. Of course, if the original Bismarck Brown and Aniline Yellow were in fact substantially the same as these, the fact of their being obtained from the aniline residues led to an incorrect classification (pp. 53 and 109).

According to the authoritative classification, therefore, even, though aniline be used (as in the case of Orange II. and Orange IV.) at some stage of their manufacture, yet, if it does not impress itself upon them sufficiently to give them the characteristics, physical or chemical, of the typical aniline dyes, like rosaniline, they are not to be regarded as in that class.

In physical properties the class of resorcin colors differs, generally, from the typical aniline colors as follows (p. 107):

Aniline.	Resorcin Red or Eosine.
Used as a dye.	Cannot be used generally as a dye.
Cannot be used generally or efficiently for paints.	Generally used as pigment for paints.
Color, crimson, running up to violet (bluish red),	Color, scarlet (yellowish red).

5. The dissimilarity between aniline and azo colors is emphasized by the similarity of the latter to cochineal.

At the time that aniline dyes were introduced the dyes in general use were produced either from animals or plants (p. 38).

When aniline dyes entered the field they drove out a certain division or class of the animal or vegetable dyes, but did not effect others, because they had not the properties necessary to replace them. Each class of coal tar dyes superseded a distinct class of natural dyes.

"The common aniline dyes were good enough to dye silk and wool for certain colors, such as reds and blues and greens and intermediate colors, and a dyer was happy to get them for those purposes; but when he wanted any other color, any shade of color, or practically any shade of yellow or any shade of scarlet, he still had to use the old dye woods or animal dyes, and if he wanted to print calico he was obliged to use the madder root. So the introduction of the artificial alizarine filled up one gap and replaced madder for calico printing. The introduction of the azo colors and the phenol colors filled up another gap and covered the whole chromatic scale" (p. 67).

"We have red aniline colors, and we have violet aniline colors; but we have no yellowish-red aniline colors and no orange aniline colors, so that there is a gap in the chromatic scale which is not filled by the aniline colors, but which is filled by the azo colors" (p. 76).

As a necessary consequence of the fact that the aniline colors are either blue, or red containing blue, or green, whereas, the colors here in controversy are oranges or reds containing yellow or scarlets; these have not replaced the aniline. "If one wants a color which aniline gives, you can't get it with the azo colors and *vice versa* the azo colors can't be supplied by anilines" (p. 103).

"These azo dyes known as naphthylamine red and orange II. and orange IV. have not replaced any aniline dyes. They have replaced cochineal and flavine, vegetable dyes or animal dyes" (p. 77).

"In the chromatic scale of colors we may have anilines with various shades of blue—that is to say, an aniline red is never scarlet and cannot be made scarlet; it always is crimson; it inclines to blue, and this has always been a want seriously felt by dyers. They have desired to obtain good colors, brilliant colors, that would replace cochineal, but the aniline colors cannot

replace cochineal, and nothing was known that could until the discovery of the azo dyes."

The azo dyes were first introduced as substitutes for cochineal among the carpet manufacturers, who could not use aniline dyes because they were too fugitive. They were adopted to the almost entire exclusion of cochineal, so that in a few years the price of cochineal fell from one dollar to thirty cents per pound and the quantity imported from 12,000 to 2,000 bags per year (p. 18).

It was at first thought that the resorcine dyes would replace safflower, but it did not answer. Its principal use is as a pigment for wall paper and for painting agricultural implements, making a red paint with a beautiful bloom or lustre (p. 23). It is very little used for dyeing.

The resorcine colors do not appear to have ever entered the field of aniline colors or *vice versa*.

6. In the trade the term aniline dyes did not have any fixed signification. Every trader had his own meaning for it. At least, no two who have testified give it the same meaning.

Lorrimer said it meant "all artificial colors" (p. 130).

Dupee said it meant any color from coal tar "that is a color in itself, or produces a color directly, like red, or blue, or green, or violet, or yellow" (p. 137).

Holliday said it meant "all colors produced from coal tar with the exception of anthracene colors" (p. 141).

This contrariety doubtless originated from the following custom among manufacturers:

"The dealers in aniline dyes head their price lists 'Aniline Dyes' and they put into them indigo and carmine and cochineal and lac, pieric acid, and stannate of soda, which is used as a mordant, and all sorts of things. On a price list you generally find all that a dealer sells, and as the aniline colors are the character-

istic things the dealer puts that on top and then puts on his sheets his aniline colors; and then if he furnishes his customers with mordants for fastening colors he puts them on too; and if he deals in some of the vegetable colors he puts them on the same sheet, and yet they are all under the heading of aniline dyes" (p. 31).

"I should say that I do not think there was any knowledge on the part of those dealing in these colors as to what was or was not aniline; they took as aniline anything that had anything whatever to do with aniline works; if it was sold by a firm that usually sold aniline color they would take it for aniline without any question at all as to whether it was or was not" (p. 116).

Congress did not intend to apply the term aniline dyes or colors in this blind manner, because, with the exception of this case, we believe that every coal-tar color which did not originate from aniline has been held to be outside this term. For example, pieric acid, rosolic acid (aurine), bromofluorescic acid, artificial alizarine.

ASSIGNMENT OF ERRORS.

The errors were committed by the admission of evidence which should have been excluded, by the charge to the jury, and by refusal to charge as requested.

The errors, though specifically numerous, were attributable to three misconceptions of law; and it will, therefore, be convenient to classify them accordingly.

First Class of Errors.

It was error to admit evidence, and give weight to the same in the charge to the jury, and refuse to charge as requested by plaintiffs with respect to the same,

showing what the importations in question were being called in the trade at the time of the trial, which was ten years after the passage of the act and five years after the importation, classification, protest, appeal and commencement of suit.

In this class the following errors may be specified:

1. The following questions to Lorrimer (pp. 130 and 131):

"Q. (Repeated) Are those aniline colors, (Orange II., Orange IV., Naphthylamine Red and Resorcin J)?

"A. All so considered by practical men.

* * * * * *

"Q. Under what name—what generic name—have these colors been dealt in and used in this country?"

2. The following questions to Turnbull (p. 133):

"Q. Under what names are these artificial colors bought and sold in this country?

"A. They are sold as aniline colors."

Then the same question was repeated as to each of the colors in question separately.

3. The following questions to Dupee (pp. 134 and 136):

"Q. Do you know under what general designation those articles are dealt in, bought and sold by the trade in this country?

"A. Yes, sir; aniline colors.

* * * * * *

"Q. By what general name are those colors known in trade in this country?

"A. Aniline colors.

* * * * * *

"Q. Now, what is the expression used in the trade to designate?"

4. The following answer by Holliday (p. 141):

"A. They are regarded as such commercially—commercial aniline colors."

5. The following question to the witness Heal (p. 142):

"Q. What are those colors—Resorcin Red J, Naphthylanine, rothecht (fast red) and Orange A and B?

"A. We have always known them, always classed them as aniline colors."

6. The following questions to Thompson (pp. 146–7):

"Q. State whether or not they are aniline dyes?

"A. We regard them as such.

* * * * * *

"Q. (Repeated.) Does the trade so regard them?

"A. Yes, sir."

7. Defendant's Exhibit B, being a trade catalogue or price list dated in 1882 (p. 121).

8. Defendant's Exhibit E, being a similar price list or catalogue (p. 127).

9. Defendant's Exhibit F, being a letter dated May 24th, 1879 (p. 128), and the box of samples referred to therein.

10. The following paragraph from the Judge's charge (p. 151):

"If those articles or either of them—these four articles—would (according to the understanding of that class of men—that is, commercial men—dealers in these articles, importers of these articles in this country) be included in the class of articles known as aniline dyes by whatever name they had come to be known at the time in question, then they were subject to the duty of aniline dyes. You see that is quite a plain question upon this evidence."

11. The following paragraph from the Judge's charge (p. 151):

"Congress used this term 'aniline dyes' as applied

to the class. They did not specify any particular thing, any one of these blues or reds or oranges; they did not say that, but they said 'aniline dyes,' meaning what would be known among this class of persons as aniline dyes. That tells us what the class was. The law was made for the future, in 1870, and again in 1874."

12. The refusal to charge as follows (p. 157):

"That it is immaterial how the articles in question were regarded in trade and that the plaintiffs are entitled to a verdict if they are satisfied upon a fair preponderance of testimony that the dyes in question are a new and different dye from aniline dyes known in 1874 and not in fact aniline dyes, unless the jury should find similitudes under the statute."

13. The refusal to charge as follows (p. 157):

"If the jury find that the plaintiff's goods were not known in commerce until since June, 1874, the plaintiffs are entitled to recover, unless the jury find that they bear a statutory similitude to the aniline dyes and colors known in 1874."

14. The refusal to charge as follows (p. 157):

"If the Court rules that the term 'aniline dyes or colors,' by whatever name known, is used in its commercial sense, then it does not apply to the goods in question, if the jury find upon a fair preponderance of testimony that they are a new article not known to commerce at the time of the passage of the act."

Second Class of Errors.

It was error to admit evidence, and give weight to the same in the charge to the jury, and to refuse the requests of plaintiffs respecting the same, showing the

signification of the term "Aniline Dyes or Colors" as a commercial term in contradistinction to a descriptive term.

This class being broader than the first, comprehends the same errors therein specified. It would be superfluous to specify all of the additional errors of this class, since they pervade the record from beginning to end, but the following may be added:

1. The overruling of the following ground of objection by plaintiff's counsel (p. 128–9, 130):

"PLAINTIFF'S COUNSEL: * * * I object that this witness is not competent so far as appears to testify as to the fact about which he is asked; he may become competent, but at present he has not been shown to be competent.

"THE COURT: As I understand, he is both a dealer and a user of these dyes. Now, it seems to me that being a dealer certainly he is competent to say by what name they are known.

"PLAINTIFF'S COUNSEL: That brings us, if your Honor please, right to the face of the confusing question (confusing to my mind certainly) whether the District Attorney stands upon the position that the clause in the statute 'aniline dyes and colors by whatever name known' is a commercial designation or a descriptive enumeration, because the testimony that is called for is different whichever position the District Attorney may take upon that point. If he takes the position that it is a commercial designation, then the question will be whether the plaintiff's dyes were bought and sold and dealt in among merchants, importers and wholesale dealers in the year 1874, under the name of or under the class of 'aniline dyes.' That is the commercial view. But if it is taken to be a descriptive enumeration then we are bound to have statements from people who know in fact what aniline dyes at that time were and what in fact aniline dyes

now are, and to know particularly in a chemical product, which you cannot tell by looking at what it is, and which you may not be able to tell by using it what it is; but certainly where it does not appear that this witness has ever used it or that he has done anything except look at it my friend must show some basis of knowledge before he can call upon this witness to express anything approximating an opinion."

After some intermediate discussion the Court said:

"THE COURT: The way it strikes me is this: Congress has used this term, 'Aniline Dyes,' as a term—as a word in the statute. They have not said, 'what is known to chemists,' nor referred it to that class at all; but they have used that word as a part of the language of the country. Now, I think when it is used with reference to importers, it must be used, it must be taken and used in the sense it would be understood by them; and that we cannot tie it down, although it is a subject involving chemistry, and the terms of chemistry to the language of chemistry, but to the general use of the word. The chemical use of the word might be so extensive as to be the use of the country; but I don't think it has been shown that it has got to be so as yet. I think we must receive all the evidence as to the use of those terms in the statute. I think the subject is wide open. This was used by Congress in 1864 with reference to what was then known; it was used by Congress in 1870 in reference to what was then known, and then in 1874 with reference to what had then come to be known, and these provisions of the statute were made with reference, not only to what of the subject was then known, but what might come up thereafter. All these decisions together."

And further on the Judge continued:

"So I shall admit all this class of evidence."

2. The refusal of the Court to charge as follows (p. 156):

"That the term 'Aniline Dyes and Colors by whatever name known,' is not used in a commercial sense, but as a descriptive term, and primarily includes only such dyes as are, in fact, aniline by their constitution."

3. The refusal of the Court to charge as follows (p. 157):

"That in determining the question at issue to instruct the jury to disregard all the testimony of the defendant as to the general name under which the articles in question were bought and sold."

Third Class of Errors.

The refusal of the Court to charge the jury as follows (p. 155):

"That if they should find upon a fair preponderance of testimony that they were used as a substitute and in place of cochineal, and not as a substitute for any aniline dye known at the time of their introduction, the plaintiffs on that branch of the case are entitled to a verdict."

I.

It is a general rule of interpretation of customs statutes to construe commercial names of articles according to the commercial understanding at the time.

Two hundred chests of tea, 9 Wheat., 430.
Elliott vs. Swartwout, 10 Pet., 137.
U. S. vs. One hundred and twelve casks, &c., 8 *Id.*, 277.
Curtis vs. Martin, 3 How., 260.
Maillard vs. Lawrence, 16 *Id.*, 251.
Arthur vs. Morrison, 96 U. S., 108.
Arthur vs. Lahey, *Id.*, 112.
Arthur vs. Davis. *Id.*, 135.

Greenleaf vs. Goodrich, 101 U. S., 278.
Robertson vs. Salomon, 130 U. S., 412.
Barber vs. Schell, 107 U. S., 617.
Arthur vs. Butterfield, 125 U. S., 70.

Judge WHEELER undertook to apply that general rule to this case, but the facts here are such that the general rule is inapplicable.

In all of the cases where it has been applied, so far as we know, the article in question had a commercial name at the time the law was enacted, and the commercial evidence relied upon related to that period. Furthermore, the name which it was sought to apply was used in the act commercially and not descriptively. This case differs:

1. Because the imports in question had no commercial name and were not discovered when the law was enacted, and had no commercial name even at the time they were entered in the Custom House. That was their first appearance as merchandise and they had been known to manufacturing chemists only for a short time.

2. Because it was plainly the intention of Congress to use the term "Aniline dyes or colors," not as an arbitrary commercial name, but as a descriptive term, so that no article not truly an aniline dye or color can be brought within that term even if erroneously so called by a trader.

II.

The admission of evidence and the charge touching upon what these articles were called in commerce about the time of the trial were error, because the articles were undiscovered and therefore unnamed at the time the act was passed.

Curtis vs. Martin, 3 How., 106, was decided under the Act of 1832, providing for a duty on "cotton bagging." The following is from the statement of the case:

"It was established by the testimony on both sides that gunny cloth was imported largely into this country, solely for bagging, for the packing of cotton, since 1835. In commercial language it has since been known as cotton bagging; but in 1832, at the time of the passing of the tariff of that year, it was not so known. The counsel for the Collector contended, at the trial in the Court below, that if the article was, in commercial understanding, known as cotton bagging at the time of its importation, it was subject to the duty, and that the term cotton bagging signified any fabric, without regard to the materials of which it is composed, that was used to bale or cover cotton, and prayed the Court so to charge the jury, which his Honor refused; but, on the contrary, charged that the point upon which the case turned was, whether the article in question was known as cotton bagging in the year 1832, when the Tariff Act was passed.

The head note read as follows:

"The duty imposed by the Act of 1832, upon cotton bagging cannot properly be levied upon an article which was not known in the market as cotton bagging in 1832, although it may subsequently be called so."

It has, however, been held that where articles of subsequent introduction are fairly and clearly included by the language of the statute they may be classed under the same.

In Newman vs. Arthur, 109 U. S., 132, 138, a new manufacture of cotton introduced subsequent to the enactment of the statute was exactly described by the statute. This Court held:

"The fact that at the date of the passage of the act, goods of the kind in question had not been manufactured, cannot withdraw them from the class to which

they belong, as described in the statute, where, as in the present case, *the language fairly and clearly includes them* " (the italics are ours).

It is distinctly proven without any attempt at contradiction that neither naphthaline red nor resourcine red have any aniline in their composition and that aniline is not employed or produced at any stage of their manufacture and that neither in color nor fastness nor manner of dyeing, do they possess the characteristics of the typical aniline dyes.

Manifestly the language " aniline dyes and colors " does not " fairly " or " clearly include " these.

As to Orange II. and Orange IV., it may be contended (unfairly as we shall see) that they are included by the language " aniline dyes or colors " because the sulphanylic acid used in their manufacture is made from aniline ; but nothing of the kind can be urged as to napthaline red or resourcin red.

If it cannot be shown that " the language of the act fairly and clearly includes " resourcin red and napthaline red, in accordance with the opinion above cited, the question arises in this case whether the subsequently originated erroneous language of the trade can be used as a substitute. If not, the testimony of Lorrimer, Turnbull, Dupee, Holliday Heall and Thompson was incompetent and immaterial where each of them testified that these colors were at present called " aniline colors " and the admission of that portion of their testimony (detailed under First Class of Errors) was error.

The knowledge of these witnesses as to the nomenclature applied to these colors was all subsequent, not only to the enactment of the statute, but also to the entry in the Custom House of the colors here in controversy and their classification. Not one of these witnesses pretends to have had any knowledge personally or by hearsay prior to 1879, when the goods in question were entered and the classification complained of was made.

The fact that these colors are to-day called by these men "aniline colors," is no evidence that the words aniline colors of the statute clearly and fairly included them, because not one of these men pretends to have any knowledge enabling him to judge whether they are correctly called aniline colors or not.

As an example of the ignorance of all of them Heal said (fol. 248):

"Q. Do you know how those colors are made?

"A. I do not.

"Q. Do you know anything about their composition?

"A. I do not."

In admitting this class of evidence Judge WHEELER held (fol. 228):

"This was used by Congress in 1864, with reference to what was then known; it was used by Congress in 1870 with reference to what was then known; and then in 1874, with reference to what had then come to be known; and these provisions of the statute were made with reference not only to what of the subject was then known, but what might come up thereafter, all these decisions together."

We submit that Judge WHEELER confused the rule of law prevailing when the article in question was in commerce at the time the act was passed, with the rule when the article was subsequently discovered. In the former case the language of merchants and importers prevails, even if incorrectly applied. In the latter case, however, no incorrect application of a name employed in the prior act should serve to bring an article into the act which, if correctly called, would not be within it. On the contrary, we understand Newman vs. Arthur to hold that the article must be clearly and fairly included by the language of the act as a fact; and not as a matter of chance, depending upon what it happens to be incorrectly called.

In the same view we submit that the Court erred in

admitting the other evidence and in refusing to charge as detailed under "First Class of Errors."

In Barber vs. Schell, 107 U. S., 617, 623, that portion of the Act of 1857 was under consideration reading "all manufactures composed wholly of cotton, which are bleached, printed, painted, or dyed." In its opinion this Court stated as follows:

"The bill of exceptions in the present case states that previously to about 1879 there were no cotton laces printed or dyed. * * * It includes any article which, as then known, satisfied any one of the conditions."

Here the Court was careful to use the words "*as then known*," and the implication is very strong that if at the time the Act was passed the article in question had *not* known at all and, when subsequently known, had *not* "satisfied one of the conditions," it would not have been classed under that language, however it might have been misnamed by the trade.

III.

It was an error to admit evidence of what these colors were called at a *date subsequent to their date of entry and the exaction of duty*, which constitutes this cause of action.

The last entry mentioned in the bill of particulars was February 1, 1879.

The last payment of duty under protest was February 21, 1879.

The date of the decision of the Secretary of the Treasury was March 12, 1879.

This action was commenced April 3, 1879.

This action came to trial January 29, 1884.

Because these colors were called "aniline colors" by

traders in 1884, at the date of the trial, *non constat* they were so called in 1879. Can, therefore, the Collector justify his classification because it was in accordance with the subsequently originated nomenclature of the trade? If not, then every one of the defendants' witnesses was incompetent to testify, and their testimony was erroneously admitted.

Turnbull admitted (p. 132) that he first came to this country in 1880; prior to which time he was therefore manifestly incompetent to testify as to the commercial nomenclature. Nor did he undertake to do so. But the Court permitted him to testify as to the meaning of terms since 1880, and therefore long after the assessment complained of.

Turnbull's testimony on this point runs as follows (p. 133):

"Q. Under what names *are* these artificial colors bought and sold in this country?

"A. They *are* sold as aniline colors.

"Q. *Is* that true of naphthylamine red?

"A. Yes, sir."

Then follows a similar question as to each of the other colors. The whole was duly objected to, the objection overruled and exception taken.

It will be observed that every question and answer is *in presenti*, therefore, treating of a period five years after the assessment of duty complained of.

The same is true of the testimony of other witnesses:

Thus Dupee testified, p. 136:

"Q. By what general name *are* those colors known in the trade in this country?

"A. Aniline colors."

Holliday testified, p. 141:

"A. They *are* regarded as such, commercially—commercial aniline colors."

Heal testified, p. 142:

"Q. *Is* that the way the trade understand them?

"Yes, sir."

Thompson testified, p. 147:

"Q. *Does* the trade so regard them—as aniline dyes?

"A. Yes, sir."

Can testimony of this kind, as to what these colors were called in 1884, act retrospectively to sustain an assessment made by the Collector in 1879? Especially can this be so when not one of the witnesses pretends to have ever heard these colors called by any name or even known of them as far back as 1879, when this classification was made and suit commenced?

Heal when asked (p. 144) when he first heard of them, answered "some two or three years ago," which would bring his knowledge back only to 1881 or 1882.

We have already pointed out that Turnbull's knowledge commenced in 1880, when he first came to this country.

It was not shown that either Holiday, Lorrimer, Dupee or Thompson had known any of these collors as early as the commencement of this suit, in April, 1879.

To hold that evidence as to the application of terms before the commencement of suit can be adduced by showing their application long after the commencement of suit is to open the door to great abuses. Who can say that the application of terms to which these witnesses testified did not originate with the classification of the Collector? When it became known that the Treasury Department classified these as "aniline colors" it was natural for merchants, who knew nothing as to what they really were, to call them so. Therefore, the evidence on this point may be the offspring of the very appraisement to correct which this action is brought.

All of this class of testimony was duly objected and excepted to. Nevertheless it was all admitted by the Court and was made almost binding upon the jury by the following language in the charge (p. 151):

"If those articles or either of them—these four

articles—would, according to the understanding of that class of men—that is, commercial men—dealers in these articles, importers of these articles in this country, be included in the class of articles known as aniline dyes by whatever name they had come to be known at the time in question, then they were subject to the duty of aniline dyes. You see that is quite a plain question upon this evidence."

That portion of the charge was also duly excepted to (pp. 155–6).

Again the Judge charged (p. 151):

* * * "they (Congress) said aniline dyes, meaning what *would be* known among this class of persons as aniline dyes. That tells us what the class was. The law was made for the future in 1870 and again in 1874." (The italics are ours.)

In other words, the Judge charged, in substance, that any color, which at any future time, without reference to the cause, happened to be called an "aniline color," properly or improperly, by people in the trade, should be included by this provision.

This was all duly excepted to on page 154.

This point was also made by the following request, which the Court refused to charge (p. 157).

"That in determining the question at issue to instruct the jury to disregard all the testimony of the defendant as to the general name under which the articles in question were bought and sold."

We have not overlooked the fact that defendants' witnesses were asked as to the meaning, generally, of the term "aniline colors," in 1874. Under the point we are now considering that line of testimony was proper enough, but it did not, of course, refer to the dyes in question, which were not commercially known in 1874, and it is now only that part of defendants' testimony referring specifically to the dyes in question which we insist should have been excluded, because it treats entirely of the use of names since this suit was commenced.

IV.

The term aniline dyes or colors was used in the statute descriptively, and its application is not to be determined by the name of things, but by their constitution and derivation.

If a color is composed of or is derived from, or contains aniline, it should be classed under this provision, no matter whether it is called an aniline color in the trade or not, and no matter whether it was discovered before or after the passage of the act. But, conversely, unless a color is composed of, or derived from, or contains aniline, it should not be classed under this provision, no matter whether it is miscalled an aniline color in the trade or not.

This would seem to be a fair interpretation of the statute and it is borne out by prior and subsequent acts and is practically the interpretation which the Treasury Department has adopted in other instances.

Of course, it is a well-settled principle of law that generally terms are to be applied according to their commercial application; but here we have a peculiar wording which, so far as we know, finds no parallel, in any decided cases. The statute does not, as is ordinarily the case, stop after naming the article; nor does it use any trade name, of which aniline dyes have innumerable. It uses a descriptive word and then adds "by whatever name known," enforcing the construction that the description is to govern and the commercial name is to be disregarded.

The term "aniline dyes or colors" was first used in the Act of 1864, and the state of the art at that time will throw some light on the signification attached to it by Congress.

At that time the testimony is that the only artificial colors commercially known were the following (p. 12): Perkins purple, rosaniline, aniline violets, pieric acid, rosolic acid.

The last two had been known for years previously, and have never been classed under the tariff as aniline dyes, although they were frequently so classed in manufacturers' price lists and referred to in the trade (p. 119).

Perkins purple, rosaniline and aniline violets were then the only colors which Congress could have had in view in 1864, when it first used the term "aniline dyes and colors" (p. 12). Everyone of them was a true aniline color, not only with respect to its manufacture, but also with respect to its composition, containing, unchanged, the aniline radical, and possessing the physical characteristics of true anilines.

These colors, then, may be taken as the type of aniline colors as intended by Congress.

Between 1864 and 1870, when the act under consideration was first passed, other artificial dyes came into market, as appears on pages 13 to 19:

Hoffman's violet.
Aniline black.
Nicholson blue.
Paris violet.
Methyl violet.
Aldehyde green.
Aniline yellow.
Artificial alizarine.

The last named was not an aniline color but was made from anthracine—another coal tar ingredient. It has never been classed as an aniline color under the tariff.

Aniline yellow or phosphine was made from aniline residues (pp. 50, 52), and was, therefore, classed with the anilines. Since then it has been questioned whether it came from the aniline or some other ingredient of the residues, and it is now understood by some to have been improperly classed.

All of the other colors mentioned agreed in origin and composition with the original aniline types.

The Act of 1864 said simply "aniline dyes," but when Congress came to pass the Act of 1870 it is as though the possibility was suggested that the term aniline dyes might be understood in its commercial signification and therefore some color actually aniline in origin or composition might escape because not so called or known in the trade. To make any such interpretation impossible, Congress added, "by whatever name known." Perhaps Judge WHEELER was correct in charging that notwithstanding this change Congress "applied this law to the same subjects as before;" but nevertheless this addition must have been intended to have some force, and undoubtedly it was intended to put a construction upon the term aniline dyes, viz., that its application was to be determined by the nature of things and not by their name.

This view is confirmed by the last change made since this suit was brought, viz., from the word "aniline" to "coal-tar." So that the provision now reads "coal-tar dyes or colors by whatever name known."

If commercially, as defendants' witnesses testify, "aniline" was synonymous with "coal-tar" or "artificial," then there was absolutely no use in the making of this change by Congress.

But since the introduction of the word "coal tar" it has been (both by the Treasury Department and the Courts) treated purely as a descriptive term, and therefore held to include various things which were previously held not to be covered by the term aniline—all of which is utterly inconsistent with the defendants' view in this case.

Thus, bromo-fluorescic-acid was held not to be comprehended by the term "aniline," but to be comprehended by "coal tar." See Treasupy Depart. Decision, No. , dated June 10, 1889.

The same is true of pieric acid. See Treasury Department Decision, No. 6011 . Nov. 12. 1883.

And of Rosolic acid. See Treasury Department Decision, No. 6609. Oct. 21. 1884

Neither pieric acid nor rosalic acid were commercially known as coal tar dyes, because both of them had been in use for many years before any coal tar dyes were discovered. Both, however, in modern times, are made from coal tar, and hence their classification as such by the Department.

Even when the statute contained the word aniline the rulings of the Department were not always consistent. Thus, in decision No. 5593, of February 28, 1883, the Treasury Department took the view which we take in classifying "Azo Benzole Fast Crimson." The decision runs thus:

"It would seem * * * that they are not aniline derivations or products, nor do they assimilate either in the element of material, quality and use to which applied, to such derivatives or products with sufficient force to bring them within the requirements of Section 2499, Revised Statutes, so as to render them liable to the rate of duty imposed by law on aniline dyes or colors. They are azo compounds and the Government chemist reports that they contain no aniline whatever, not even a trace. The department decides that these azo benzole colors cannot be classified as aniline dyes or colors and that they are dutiable at the rate of 20% *ad valorem* under the provision of Section 2516, Revised Statutes, for manufactured articles not otherwise provided for."

Had the department there adopted the criterion of trade misnomers the azo benzole colors would have fallen in the "aniline" class just as certainly as either naphthaline red or resorcin red. But the department there gave the terms a descriptive construction, and under such construction the colors in question must be ranged outside aniline colors for the identical reasons assigned for the azo benzoles.

If we follow Judge WHEELER'S ruling and adopt the

loose language of the trade as controlling, we are led at once into absurdities and into conflict with the tariff itself.

The custom of dealers is stated in the testimony thus (p. 31):

"The dealers in 'aniline dyes' head their price lists 'analine dyes' and they put into them indigo and carmine and cochineal and lac, pieric acid, and of soda, which is used as a mordant, and all sorts of things. On a price list you generally find that a dealer sells, and as aniline colors are the characteristic things the dealer puts that on top and then puts on the sheet his aniline colors, and then if he furnished his customers with mordants for fastening colors, he puts those on too; and if he deals in some vegetable colors he puts them on the same sheet and yet they are all under the heading of aniline dyes."

This custom is exemplified in the list marked "Defs'. Ex. B, p. 121.." Also by the letter marked "Defts'. Ex. F," and the case referred to therein; the case containing even extract of indigo. Also by the testimony of such men as Lorimer, who classes all artificial dyes as aniline dyes, as well as others of defendant's witnesses, But it is perfectly plain that Congress did not intend the word to be construed in this loose way. In fact to thus construe it would be to bring it in conflict with other provisions.

Thus, artificial alizarine, which is an artificial dye, was expressly provided for. Pieric acid also was held to come under another provision. So also rosolic acid and bromofluorescic acid.

Everything, therefore, tends to sustain our position that this term aniline dyes or colors was used descriptively.

The Court therefore erred in refusing to charge the jury when requested (p. 156):

"That the term aniline dyes and colors by whatever name known is not used in a general commercial sense,

but as a descriptive term and primarily includes only such dyes as are in fact aniline by their constitution."

This error of the Court was in substance repeated throughout the charge and wherever testimony was admitted as to the meaning of the word commercially.

It is by no means a rule of universal application that terms of the tariff are construed in their commercial sense. They have never been so construed when applied prospectively or prophetically.

In Newman vs. Arthur, 109 U. S., 132, they were, under such circumstances, given a descriptive signification.

But even where terms were applied to articles known at the date of the act they have repeatedly, by this Court, been given a descriptive in contradistinction to a commercial signification.

In Barber vs. Schell, 107 U. S., 617, 621, in relation to the language "cotton laces," &c., this Court said: "The designations qualified by the word 'cotton' in the Act of 1846 are designations of articles by special description as contradistinguished from designations by a commercial name or a name of trade. They are designations of quality and material."

Further on the opinion continues:

"There is no question of commercial designation. Hence the cases cited and relied on by the importers are not in their favor."

Further on, the Court draws the distinction thus (p. 623):

"The principle of that case (Arthur vs. Lahey, 96 U. S., 112, where laces made of silk were held to be 'thread lace,' because so called commercially) and of kindred cases, such as Arthur vs. Rheims, *Id.* 143, is that the specific designation of an article by a commercial name will prevail over a general term in a later act, and has no application to the present case, which is not as to cotton laces and cotton insertings, one of designation by a commercial name."

In Homer vs. Collector, 1 Wall., 486, it was contended by the importers that the term "dried fruits," in the Act of 1857, comprehended "almonds," for which a different rate of duty was prescribed in the Act of 1846, because evidence was produced at the trial to show that, commercially, almonds were in 1857 called "dried fruits." This Court held that full effect could be given to the words "dried fruit" as a descriptive term without including almonds, and that, therefore, whether in a commercial sense almonds were dried fruit had nothing to do with the question.

See also Reiche vs. Smythe, 13 Wall., 162, where it was held that the word "animals" in the Act of 1861 did not include birds.

In Greenleaf vs. Goodrich, 101 U. S., 278, 284, the Court said:

"Reliance is placed upon the rule, which we admit to be established, that the commercial designation of an article among traders and importers, where such designation is clearly established, fixes its character for the purpose of the tariff laws. But the present is not a case of commercial designation of articles. The phrase 'of similar description' is not a commercial term."

Referring to Maillard vs. Lawrence the Court continued (p. 285): "The case was rested on the basis that 'wearing apparel' was not a technical term. Much less is the phrase goods 'of a similar description.'"

In Maillard vs. Lawrence, 16 How., 261, this Court held:

"The effort has been to substitute for the literal and lexicographical and popular meaning of the phrase 'wearing apparel' some supposed mercantile or commercial signification for these words, and to render subservient to that sifinification what was clearly accordant with the etymology of the language of the statute, with the essential purposes and action of the government, and with the widespread, if not the universal, understanding of all who may not happen to fall within the range

of a limited and interested class. In instances in which words or phrases are novel or obscure, as in terms of art, where they are peculiar or exclusive in their signification, it may be proper to explain or elucidate them by reference to the art or science to which they are appropriate."

Manifestly, therefore, this Court recognizes that the Tariff may use words either as commercial names or in a descriptive sense.

The question, therefore, arises whether the term "aniline dyes and colors" was used as a commercial name like "thread laces" in Arthur vs. Lahey, or in a descriptive sense like "cotton laces," in Barber vs. Schell.

We submit that the context must govern and when we find the term "aniline dyes and colors" immediately followed by the words "by whatever name known," we submit that Congress recognized that it was not a commercial name. If it had been considered a commercial name the context should have read "by whatever *other* name known." And this argument is enforced by the fact that originally in the Act of 1864 the term "aniline dyes and colors" was used without the context, showing by the insertion of this context that the term was not to be regarded in its ordinary signification but descriptively.

V.

Assuming the term "aniline dyes or colors" be applied descriptively, the record suggests two possible significations for it:

1. To include only those dyes and colors which are made from aniline.

If this signification is correct the chart, at the end of this brief, shows that

Naphthylamine red is derived wholly from naphthaline.

Resorcin red J is derived from benzole and naphthaline.

Orange II. is derived from naphthaline and indirectly from aniline.

Orange IV. is derived indirectly from aniline.

Therefore it certainly follows that under this signification neither naphthylamine red nor resorcin red J are analine dyes or colors. Orange II. and IV. being so far removed as to have lost the aniline characteristics may be considered doubtful.

2. The second signification possible is that the term includes only those dyes and colors which contain the characteristic radical or nucleus of aniline, and the physical characteristics common to the typical aniline dyes. This is the view taken by Drs. Morton, Chandler and Ordway, and under it even dyes like orange II. and orange IV. which partake of aniline in the remote stages of their manufacture are not classed as aniline dyes or colors when the aniline has not impressed its characteristic physical properties and constitution upon them.

This view has been quite fully elucidated in this brief, page 5 to page 9 .

VI.

The third class of errors assigned relates more particularly to the question of similitude. We believe that, even if the rulings of the Court were correct on all other points, it erred in not attributing weight to the

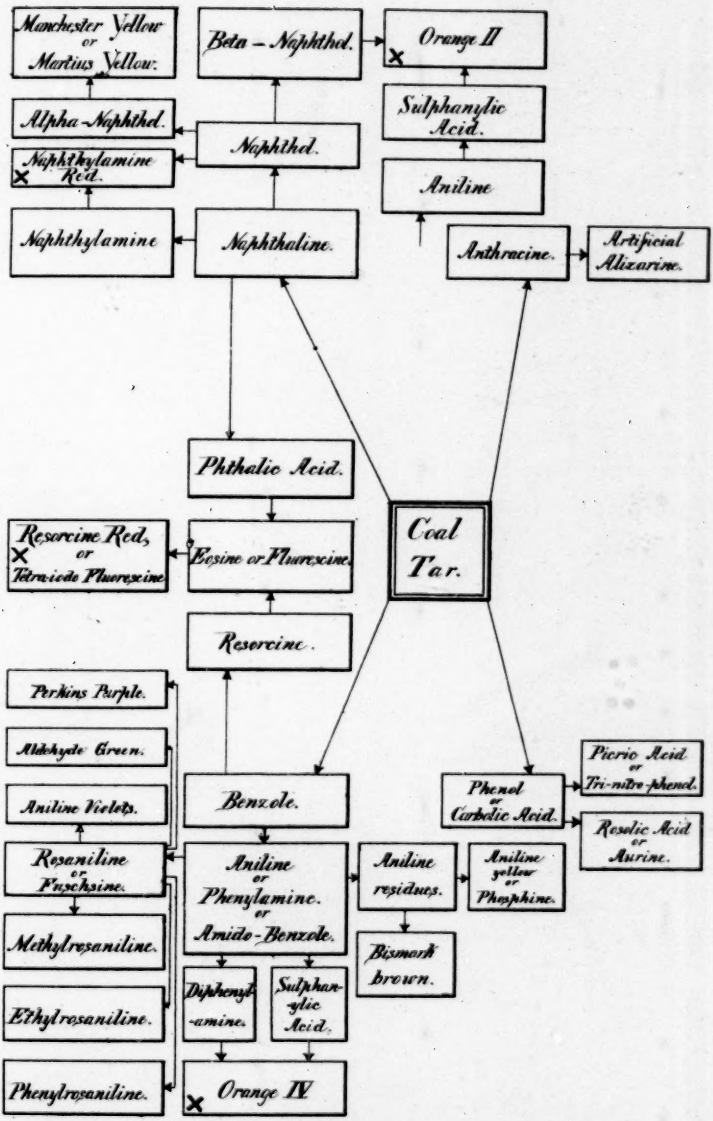
very conclusive evidence that the diazo colors are shown by the field they embraced to fill the place of cochineal and not of aniline colors. This should have been submitted fairly to the jury in accordance with plaintiff's request, because, manifestly it precluded any possibility of the jury finding similitude between azo colors and aniline colors.

Respectfully submitted,

BENJ. F. THURSTON,

LIVINGSTON GIFFORD,

Of Counsel for Plaintiffs.


Manchester Yellow or Martius Yellow.
Beta – Naphthol.
Orange II
Alpha-Naphthol.
Naphthol.
Sulphanylic Acid.
Naphthylamine Red.
Aniline
Naphthylamine
Naphthaline.
Anthracine.
Artificial Alizarine.
Phthalic Acid.
Resorcine Red, or Tetraiodo Fluorexine
Eosine or Fluorexine.
Coal Tar.
Resorcine.
Perkins Purple.
Aldehyde Green.
Aniline Violets.
Benzole.
Picric Acid or Tri-nitro-phenol.
Phenol or Carbolic Acid.
Rosolic Acid or Aurine.
Rosaniline or Fuchsine.
Aniline or Phenylamine. or Amido-Benzole.
Aniline residues.
Aniline yellow or Phosphine.
Methylrosaniline.
Bismarck brown.
Diphenyl-amine.
Sulphanylic Acid.
Ethylrosaniline.
Phenylrosaniline.
Orange IV

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STATEMENT.

The facts are fairly stated by the trial judge in his charge to the jury (pp. 150 to 154).

The jury found for defendant.

POINTS.

I.

All rulings upon the *admission* of evidence to which exception was taken are believed to be proper under the *objections as made* at the trial.

II.

The portions of the charge excepted to, when read in their setting, and *as parts of the charge as a whole*, and giving to the context in each case its due weight, are not subject to exception in the light of the evidence given.

III.

But certainly the portions of the charge excepted to, when read in the light of the fact that there was *much evidence given on the trial which does not appear in the record*, can not be complained of here, if the missing evidence *might* have justified them.

It appears on page 150 (Ms. p. 259) that "a large amount of testimony was introduced on behalf of *both* parties as to the similitude or resemblance" of the articles imported to the aniline dyes and colors mentioned by Congress.

This subject of "similitude" and "resemblance" was recognized not only by the defendant below, but by the court in his charge and upon his rulings upon the admissions of evidence, as one of very great importance.

Such evidence not appearing in the record, how can it be urged here that *any portion* of the charge, or any

refusal to charge, which *might* by any possibility have influenced such charge or refusal was error?

How can we know whether it was error or not without having such evidence before us?

It seems as if this matter of similitude must have had a very important bearing, not only upon the charge and refusal, but also on the rulings as to the admission of evidence.

IV.

The requests to charge may be divided into two classes, (1) those refused and (2) those which the trial judge declined to "charge otherwise than as already charged."

As to the *first*, it is submitted that the court could not have charged either of them, in the *precise words* of the request.

As to the *second*, many of them the court could not have charged in the *exact* words of the request; and in all of them, it is respectfully submitted that the charge of the court was plainer, fairer, and more in consonance with the law applicable, under the evidence appearing and *supposed* (see Point II), than were the requests themselves.

O. W. CHAPMAN,
Solicitor-General.